Sensorial Perception:
Empowering Dance Practice Embodiment Through Live and Virtual Environments.

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Abstract

This thesis presents a phenomenological study exploring the practice of creating movement in live and virtual environments. The title of this study is Sensory Perception: Empowering dance embodiment through live and virtual environments. The aims of this study are: to experience the sensorial embodiment within live and virtual environments; and to understand the cognitive responses to a set of visual moving images that are mediated through the visual perception of the participant.

This study was conducted by the author Lucie Lee in 2012-2013 at the University of Bedfordshire. The theoretical underpinning for this study used mainly two French phenomenological philosophers Maurice Merleau-Ponty (1859-1941) and Henri Louis Bergeson (1908-1961). This thesis discusses other cultural theories, which were contextualised in theoretical and practical approaches to this study such as post-modernism in dance, *Liveness* defined by Philip Auslander (1999) and Embodying theory (1998) described by Sarah Rubidge. The other component of this practice led research focuses on cognitive science. This study uses the software developed by Mark Coniglio founder of Troika Ranch Dance Company, call Isadora. This software provides the level of interaction needed for this study. Although the software was developed for creative application of technology in performance, in this investigation it acts as a research tool. Through the software's applications the explorative creative tasks were interactive and utilised in the live and virtual environments.

This practice-led research adopts the methodology of practice as research and an approach developed by performance theorist Professor Robin Nelson (2006). It also draws on the improvisatory processes of two American dancers and practitioners Alma Hawkins (1991) and Anna Halprin (1995). The improvisation technique deployed in this study is

directly linked to Feldenkrais Method (1972). The explorative tasks were practically undertaken by a dancer in order to explore the role of sensory perception with improvisatory context. Wassily Kandinsky's (1866-1984) works were used as a stimulus within this method to engage the performer in the use of colours and objects within creative tasks.

In conclusion, the thesis highlights the importance of the development within the practice-led process of the processes and methods undertaken by the researcher and dancer. The summary of findings of this research created several practical improvisatory short scores with ten minute durations. The future developments of this research study are outlined in this conclusion chapter.

Declaration

I declare that this thesis is my own unaided work. It is being submitted for the Master of Arts by Research Degree at the University of Bedfordshire.

It has not been submitted before for any degree or examination in any other University.

Name of Candidate: Lucie Lee BA Hons Signature:
Date:25.03.2013

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Introduction

This study considers the dancer's cognitive sensory embodied experience in generating movement within technologically mediated environments. In particular it focuses on how and in what ways somatic awareness is employed in order to create and generate movement through the visual sense; the role of phenomenal and physical perception in experiencing the visual; and the impact it has on movement when visual stimuli are experienced in a live and a virtual environment. The key objectives of this practice-led research are concerned with firstly understanding the experience of embodiment and the somatic moving body within two different environments the live and the virtual; and secondly to develop insights into the specificity of the generative improvisatory process within this environment.

The concept of *liveness* is defined by Philip Auslander in his book Liveness Performance in a Mediatized Culture (2008) within live performance cultural cover attempting to explicit the value of the energy and live theatre, which exists between performers and spectators in live event. This energy of live event creates the "community" amongst the performers and spectators. Philip Auslander is professor in the School of Literature, Media, and Communication at Georgia Institute of Technology in Atlanta. The binary opposition and its complex functions can be sometimes missed, by use of these concepts, which to describe the relationship between live performance and its present mediatized environment. Steve Wurtzler, Professor of engineering, technology and cinema studies, says about the traditional view:

> As socially and historically produced, the categories of the live and the recorded are defined in a mutually exclusive relationship, in that the notion of the live is premised on the absence of recording and the defining fact of the recorded is the absence of the live (Wurtzler, Auslander, 2008, p.3).

This traditional view presents the ‘live’ is categorized as non representational. Wurtzler further defines that the primary live event as *real* and therefore the mediatized event is an *artificial* reproduction of the real. Subsequently Marie-Laure Ryan, a prominent literary scholar and critic, presents the meaning of *virtual* by going back to the origins of the Latin term *virtualis*, meaning “the potential, what is in the power of the force” (Zizek, Dixon, 2007, p.23). Ryan suggests that in the Eighteen Century the meaning of *virtual* changed to mean non-actual, fake referring to a fictive space. Ryan claims that despite the virtual meaning fake, it still creates a sense of place, which does not exist physically; however it transports the user into the non-existing place.

> We enjoy images precisely because they are not “the real thing,” we enjoy them for the skill with which they are crafted. This pleasure presupposes that the readers or spectators of artistic texts do not fall victim to a mimetic illusion; it is because they know in the back of their minds that the text is a mere double that they appreciate the illusionistic effect of the image, the fakeness of the fake (Ryan, Dixon, 2007, p.142).

Ryan then concludes that there are two factors of computational virtuality, when analyzing the pre- and post-eighteenth-century definition of ‘virtual’. Those two factors are positive and negative. The positive factor has relation with potential to actual and the negative factor is related to fake. These dual notions are clearly used in advanced computer stimulations such as Virtual Reality (VR). Therefore even in it's fictional place there is a potential to facilitate the creative growth (Dixon, 2007). “the late twentieth century regards the fakeness of the fake as an inherent source of gratification” (Ryan, Dixon, 2007, p.23)

The interactive media revolution began with Max Vernon Mathews (1928 – 2011), who was a pioneer in the world of computer music. He was interested in the potential impact of digital technology on music. He studied electrical engineering and was founder of MUSIC Programme for sound and music in 1957 Bell Labs California. He developed software such as the *Life Forms*, *Biped* and *Character Studio* which were mainly developed for the commercial use (Dixon, 2007). His *Max* programme is based on the theory of graphical

display manipulation rather than the mathematical manipulations which other digital computer programs (were) developed at that time (1957) (Dixon, 2007). One of the most significant dance specific software developments has been the development by Mark Coniglio of *Isadora*, which has been a fundamental research tool in this study. The software allows the user to build programmes by manipulating graphical symbols, which look like blocks. It also allows to the user to see the immediate results of the creation. The software also allows the user to accept, reject or modify the program according to their needs (Dixon, 2007). The aesthetics of the interactivity of this software is further explored in chapter two of this study. Digital media will be used as a research tool for advanced explorations within both live and virtual environments. The interactivity between dancer and technology is embodied within this research through explorative practical tasks. Therefore, technology will be used in order to enhance and support the extension of the physical body, as well as the key aspect of developing, understanding and measuring the impact on movement when collecting data through the visual sense.

This study is a practice led research project and therefore has two parts: a written component and a practical component. The written component provides the theoretical concepts, methodologies and established methods and summary of findings of this research study. It is divided into five sections. The written component is divided into: Chapter one introduction, which provides the prologue of this thesis. Chapter two provides a discussion of the theoretical frameworks that underpin this study. Chapter three offers the methodological underpinning for the practical investigation. Chapter four outlines the analysis methods utilised in relationship to the practical explorations and Chapter five summarises the main findings applicable to the practical explorations and propose the potential of further developments of this research.

The Research Context

> We are caught up in the world and we do not succeed in extricating ourselves from it in order to achieve consciousness of the world. If we did we should see that the quality is never experienced immediately, and that all consciousness is consciousness of something (Merleau-Ponty, 1945, p. 5).

During This chapter will introduce the theoretical concepts used in this research study. The theoretical context of embodied experiences within the sensory perception is supported by the concept of Maurice Merleau-Ponty's perceptual phenomena as well as Henri Bergson's perception of multiplicity. The experience of embodiment within the live and virtual environment is linked to the theoretical understanding of cognitive neuroscience such as cognitive functions and neural substrates mental processes. These theories are with the visual perception of moving a subject within these two environments. The contribution of improvisation and interactivity theories are outlined within this chapter.

Postmodern dance is a twentieth century Western dance form. During the period between 1960s-1970s the postmodern dance challenged the traditional hierarchy of dance practice and developed new methods of dance composition. Postmodern dance took on a notion of democracy where the dancer, trained or untrained, had a voice and developed the creative voice. During this period other interdisciplinary collaborative practices were developed and took influences from dance improvisation, contact improvisation, dance for camera and others. Visual technologies such as video became more available and emerged of video democratised and documentation processes within the choreographic approaches and connected to the projects (Banes, 1987).

Anna Halprin is one of the key dance practitioners of American post-modern dance. Together with Steve Paxton, Merce Cunningham, Yvonne Rainer and other peers, she used the post-modern term to categorize her work. The Judson Church in New York, was the locus for the break away from modern dance which occurred during the 1960s. “The history of modern dance is rapidly cyclical: revolution and institution; “(T)he ‘tradition of the new’ demands that every dancer be a potential choreographer” (Banes, 1987, p.4). The philosophy and style of American modern dance had become well established by the 1950s. The movement characteristics were the representation of modern life within the choreographic frame of gravity, the dissonance of a potent horizontal position of the body as well as the referencing of ritual dances of non-Western cultures. The early American post-modern choreographers were aware of the historical crisis being articulated in philosophical and critical contexts, impacting on dance and other arts. By engaging with these ideas, key practitioners explored the oppositional role to modern dance, which made them bearers and critics of two separate dance traditions. One was the expressive twentieth-century phenomenon of modern dance and in the opposition the academic, classical traditional practice with its strict elements of grace and harmony. ”One was the uniquely twentieth-century phenomenon of modern dance; the other was the balletic, academic dance d’ecole…” (Banes, 1982, p. xiii). Yvonne Rainer, Steve Paxton and other American post-modern choreographers where united by their radical approach to choreographic practice. The new style with its own aesthetic formulation of post-modern practitioners, who had the desire to reconceived the medium of dance. Post-modern theorist Michael Kirby used the term ‘post-modern’ in *The Drama Review* (1975) and proposed the definition as follows:

> In the theory of post-modern dance, the choreographer does not apply visual standards to the work. The view is an interior one: movement is not preselected for its characteristics but results from certain decisions, goals, plans schemes, rules, concepts or problems. Whatever actual movement occurs during the performance is acceptable as long as the limiting and controlling principles are adhered to (Banes, 1987, p.xiv).

This suggests that post-modern dance works with costumes, lighting, sets and props are only used for their functional purpose. Therefore post-modern dance rejects musicality, meaning, characterisation, mood and atmosphere. American dance theorist Sally Banes describes in her book Terpsichore in Sneakers: Post-Modern Dance (1987) the analytic post-modern dance in a new light, which is in opposition to Michael Kirby's definition. She suggests Kirby's seems very limited. Banes describes the development of the analytic post-modern dance, in which practitioners were committed to defining of frameworks and methods in creative process within the sixties. The practitioners had also an idea of how such a definition should be pursued with "emphasizing choreographic structure and in terms of foregrounding movement per se" (Banes, 1987, p. xxi). "In analytic post-modern dance, movement became objective as it was distanced from personal expression through the use of scores, bodily attitudes that suggested work and other ordinary movements, verbal commentaries, and tasks " (Banes, 1987, p. xxi). Banes further suggested that the term 'post-modern' created even more confusion, because historically modern dances were never modernist when focused is on the nature of modernist dance. Banes explain further that the issues of confusion concerning definitions of dance modernism and post-modern dance have arisen due to this lack of correlation between dance and broader cultural usage. She says:

> The acknowledgment of the medium's materials, the revealing of dance's essential qualities as an art form, the separation of formal elements, the abstraction of forms, and the elimination of external reference as subjects. Thus in many respects it is post-modern dance that functions as *modernist* art (Banes, 1987, p. xv).

Therefore for Banes post-modern dance has some of the functions of modernist visual art. The other post-modernism notions of post-modern dance: pastiche, irony, playfulness, historical references, and an interest in process over product are all shared with other art forms. There was a need to break down boundaries between art forms as well as between art and life, which created new relationships between performers and audiences. The early

post-modern choreographers saw the opportunity in taking away from the melioration of the modern dance in respect to the use of the body. For Sally Banes modern dance “developed into an esoteric art form for the intelligentsia” (Banes, 1987, p. xvi). Modern dance drew on a bodily configuration, which categorized into stylized vocabularies and dances had input of drama, literary and emotional significations. Subsequently often the hierarchical structures of formed dance companies were rarely accepting new young choreographers into their close group of masters. One of the post-modern choreographers, Merce Cunningham (1919-2009) an American modern dancer and choreographer became an important choreographer who stood on the border between modern and post-modern dance (Banes, 1987). His dance vocabulary remained a specialized, technical one such as vertical, dynamic movement styles, abstract dance movement and the dances which he presented. His choreography used the ‘chance technique’, which gave new meaning to the dance, space, timing and body parts and created a bodily image of modern intellect. His emphasis was on the separation of elements of modern dance and music from the dancing, which then creates the body as a medium of the art form (Banes, 1987). Cunningham created an important foundation for other ideas and actions to develop by collaborating with other artists such as Composer John Cage. Therefore by breaking the boundaries of historical modern dance, the post-modern choreographers ‘found new ways to foreground the medium of dance rather than its meaning’ (Banes,1987, p.xvi).

The dances that Merce Cunningham provided were urgent reconsiderations of the dance medium. They became the subjects of the post-modern analysis such as history, nature and dances structures. This break away period, roughly from 1960-1973, was showing the departure from modern dance. Through this period post-modern dance was set forth using references to history, new ways of using time, space and the body as well as problems of defining dance (Banes, 1987). There were three themes according to Banes. In the first theme the choreographers acknowledged the heritage of the choreographers, who set to break away from its traditions. This is evident in Yvonne Rainer’s piece *Three Seascapes* (1962) where a screaming and flailing women throws a hissy fit. The second and third themes were concerned with present and the future. The serious questions of what new

dance could be were explored through practice. Simone Forti's work *Huddle* (1961) in which the performers had to take turns crawling over the huddled group for approximately ten minutes, or in Steve Paxton's *Flat* (1964) where the performers had to dress and undress in unhurried real time and striking static poses.

The spaces in which post-modern dance took place were explored in two ways: firstly articulation in the dance such as exploring the architectural details in the design of the space and secondly in terms of place such as gallery or church instead of the traditional theatre venue. Therefore the whole set of new ideas of where to perform, and engage audiences set the area of the post-modern dance. The members of Judson Dance Theatre were performing in a range of non-performance spaces such as churches and even in a roller-skating rink in Washington. D.C., Paxton's work *Afternoon* (1963) placed on a farm in New Jersey, or Trisha Brown performed on the chicken-coop roof, or Simone Forti's work *Rollers* and *See-Saw* (1960) in an art gallery, where people walked around the relative still dancers as if they were sculptures.

The exploration of the body and its functions gave different forms to work with in post-modern dances. One form took the relaxation and loosening of the control, which is characterized in Western dance technique. Others deliberately worked with untrained dancers to search for the ''natural'' body, and another took the extremism of improvisations such as nudity, eating onstage, dealing with explicitly of sexual imagery and others. The choreographers of early post-modern dance had a problem with defining the dance, which was related to explorations of the space, time, and the body. However they embraced the other arts beyond them and asserted propositions about the nature of dance through interdisciplinary relationships with other art forms and cultural practices (Banes, 1987). According to Banes, between 1968-1973 three themes were developed in post-modern dance practices such as identity politics, audience engagement and non-Western philosophical and somatic influences (Banes, 1987). Theatre and dance during this period became a stage for the wider social and political battles taking place in America such as the anti-war movement, black power, feminism and gay rights. For example Rainer's piece

WAR (1970) and *Continuous Project- Altered Daily* (1970) explored the issues of leadership and control as well as the mode of performance. Steve Paxton's works were dealing with censorship, personal intervention, and civic responsibilities in 1970-1973 (Banes, 1987). The improvisation collective the Grand Union formed in 1970 and made it possible for the Black Panthers to perform in and a women's improvisation collective was formed in 1971. Steve Paxton's new technique of Contact Improvisation also evolved as an alternative social network (Banes, 1987). Contact Improvisation is concerned with the physical movement of falling within a partner work and its physical improvisation, which has social and political associations. The manifestation of this technique seems to project a lifestyle and possible representation of the world, in which this technique stands for freedom and adaptation as well as supporting the trust and cooperation (Banes, 1987).

Improvisation is a technique where images are pulled out from the underneath of human psyche beyond the affirmed language. Carl Gustav Jung (1875-1961) was a Swiss psychotherapist and psychiatrist, who developed the concepts of individualisation as part of the analytical psychology. This concept is integrating the opposites such as conscious with the unconscious while maintaining its relative autonomy (Jung, 1973). C. G. Jung's notions of the individuation and synchronization concepts were used within improvisation as a form of rehearsal technique. Through the 1940s and 1950s many choreographers of modern dance argued that through improvisation the dancer and choreographer might expand and access the unknown territory of the inner self. Artists of modern dance saw improvisation as a primary source of discovering the inner voice of the practitioner. And therefore the composition is private reflection and discovery, which should not be performed on the stage. Improvisation requires both body and mind to be active in the same time (Albright with Gere, 2003). Dance improvisation provides the body's intelligence, which manifests itself surprisingly and a fast moving responsive mind becomes a necessity. "The body thinks. The mind dances" (Albright with Gere, 2003, p.xiv). The dancers and choreographers made improvisation as part of their regular practice sometimes even a daily practice. This would prepare the body and mind to act on the moment of surprise when confronted by it during the performance. The 'knowing' within improvisation what to

do at a moment of choice or what to draw on if nothing comes to the mind lays in the foundation of training and practice. To improvise means also to engage in an aimless way of moving through the space.

The word “improvisation” was not used regularly until the 1960s by the Judson Dance Theatre. Anna Halprin, American dancer and teacher, played an essential role in establishing an interest in improvisation and she discovered the utility of improvisation through a model of child’s play. Improvisation became the dominant way of generating her new movement material for performance work in 1960s (Ross, Albright with Gere, 2003). The transition period between the 1940s and 1960s made it possible for her to move gradually from formal to narrative works with a goal of more personal vocabulary. Halprin’s early works reflected the experiences of her earlier studies, when in class she was asked to ‘act like a child’ and she did not want to improvise at that time as well as working with children later on in her teaching career (Ross, Albright with Gere, 2003). The experiments she explored with children in a freely controlled dance environment showed her the potential of innovation with improvisatory structures. She wanted to achieve the balance between structure and freedom. In other words the sense of spontaneous behavior in guided order. She worked within community settings where she worked with children, who, she claims, were fresh and have an innate sense of spontaneous movement and creativity. However she was concerned to give the class a shape with boundaries. Therefore within her approach each child’s individuality was a starting point in her dance class. Through this theory the freely constructed children dance class, pushed for spontaneity of movement. The movement created was relaxed, comfortable and sometimes odd shapes, which did not matter how it looked. The movement had its own meaning, which Halprin preferred. The constructed methods of the classes were improvisation tasks such as a list of six objectives controlled with a rich improvisatory sensibility (Ross, Albright with Gere, 2003). This approach set a framework on how to undertake the explorative creative tasks by past and current practitioners. “The improvising dancer tacks back and forth between the *known* and the *unknown*, between the familiar/reliable and the unanticipated/unpredictable” (Foster, Albright with Gere, 2003, p.3).

Susan Leigh Foster in her essay Improvisation in Dance and Mind in the book Taken by Surprise (2003) is explaining the phenomenological analysis of the *known*. It is presented by the set of behavior conventions, which are established by the performing context or already occurred previously either in the theatre, lecture or on the street. It also can be the individual body's tendency to move in patterns of impulses, which established through the training or preference of making certain selections from a vocabulary or a sequence of movements already known to the dancer. Consequently it includes any overarching structural guidelines that restrict the improvising body's choices such as a score or set of rules given in advance. Foster defines the *unknown* as something which was previously unimaginable, in which the dancer could not think of doing next and it is more. The improvisation technique makes the dancer to go further from known and to extend into, to go beyond the unknown. Foster defines that the improvisation process encourages the dancer to be "taken by surprise" (Foster, 2003, p.4) as well as the dancer could not have reached that *unknown* state without the 'knowing' movement (Foster, 2003). Foster also defines the improvised tact of known and *unknown* historically. The performance of any action contains an element of improvisation no matter how the set of moves are within the dancer's body or those who witness it. Foster says: "The moment of wavering while contemplating, how, exactly, to execute an action already deeply known, belies the presence of improvised action" (Foster, Albright with Gere, 2003, p.4).

The *not-quite-known* moment of suspense gives live performance a sense of live authenticity. However history keeps track of the *known*, which is focused on the behavior patterns of and retrained actions of the dancer. History chooses from a multitude of patterns only those actions that leave behind some permanent residue and documenting their effects. And from the overwhelming number of documentations it chooses only a few to reach the written discourse of reasoning and debating process in such as historical book or archived journals. Foster also suggests that histories typically suppress improvisation within human actions as well as denying a historian, who selects and interacts with all documentation of the past through improvisation in order to decode change over time. The question of how certain historical human actions, such as development in dance

vocabulary, slide easily across representational fields into the historical record has been neglected by historical analysis as well as how others are determinedly unnoticed. How the history would look like and how the history of the improvised body might be articulated and documented if the fact of improvisation was acknowledged? Foster claims, that history informed us about the works of practitioners who contributed into the development of the improvisation such as Richard Bull's Dance Theatre piece titled *Making and Doing* (1985). This piece was an exercise in the intention of making new movement and then recalling it precisely in performance. This was documented according to the reviewer. However Foster questions the role of the spectator in constructing the work. If the viewer was part of the early experimentations and therefore their knowledge of process would inform their understanding of the documentation. She proposed the analysis, where the dancers and choreographers guided by Richard Bull's score, organized a rehearsal with performed warm-up exercises, talked about their preparations and ran through a part of a section of the dance, where each dancer took a solo and joined in a unison finale. This first set of the dance is then repeated to music. They perform their entire interaction, which includes casual conversation gestures and facial expressions without talking to each other. The final part provides a repetition of the supposedly rehashed dance with the original talking and no music as the lights fade to end the dance. Therefore the viewers are led through a staged rehearsal and then re-presenting that rehearsal to music *Making and Doing* during the performance, which is improvised process as a dance event. Despite that all three parts were structured in the rehearsal, the specific movements were improvised. The choreographing of the three parts, generating new sequences and innovating in new movement to the score and making unpredictable actions of the other dancers becomes an evolving process of the piece (Foster, Albright with Gere, 2003). The improvisation happens when the dancers forgot a proportion of the material or the different timing of the already performed. In this context the performers tapped into *known* and *unknown* responses. Foster also comments that upon the viewing of the piece, she felt the tension among what was happening, the question of what might happen next as well as how dancers influenced the choices of the overall performance, that is what made it exciting. However the dance was not announced that it was improvised piece and viewers indulged

in the spontaneous compositions where dancers manifested the particular quality of alertness while making and doing the dance (Foster, Albright with Gere, 2003). Therefore Foster presents a number of inquiries into the improvisation process such as, what are the ways of comparing different modes of improvisation approaches and the effects of the *known* and *unknown,* which this study explores in practice.

The *mind* and *body* terms stand in for *known* and *unknown* within the historical description of experiencing and doing improvisation technique (Foster, Albright with Gere, 2003). The meaning of the improvisation process is presented in written format as a process of letting go of the thinking mind in order to allow the body to move through the space in unpredictable ways. However Foster says this description is confusing and inaccurate, because all bodily articulation is charged by awareness. The awareness of each body section moves across the space directly and indirectly as well as each effort and tension exploded into force of energy. The variety of discourse is structured within the conceptualized meaning of the improvisation when the bodily awareness is accomplished (Foster, Albright with Gere, 2003). Improvisation can be seen as a tool for accomplishing some purpose such as creating performance; bonding groups of people together or simply having fun (Spain, Albright with Gere, 2003). Consequently Halprin's approach to improvisation within her own practice became the means of connecting the group together through the task of finding a movement solution to a communal problem. Halprin's principles of improvisation as a serious tool of dance invention is framing the theory of which the body must be physically and emotionally prepared to improvise (Ross, Albright with Gere, 2003). Kent De Spain in his essay The Cutting Edge of Awareness in Taken by Surprise (2003) claims that there is a certain reason to improvise either when warming-up, creating specific movement for choreographic purpose or exploring new movement as a training system. It is seen as an extension of the dancer's intention which can be visible or invisible (Spain, Albright with Gere, 2003).

Thus improvisation involves the moments where the dancer thinks in advance what will come as well as moments of actions where the registration of consciousness moves the

body (Foster, Albright with Gere, 2003). Spain refines his definition of improvisation as means to be present in the moment and being aware of the inner self within that moment, which refines the dancer's presence in each following moment (Spain, Albright with Gere, 2003). Consequently at the same time there is a moment in which one performs the idea when the other one thinks of the idea. Improvisation therefore encourages "bodily mindfulness" (Foster, 2003, p7) and enhances the awareness between *immediate* action and overall structure. In other words the physical and mental manifestation is between what is going to take or already taking place, as well as is or will take place. Improvisation provides the mechanism by which the dancer can move beyond their technique experiences. The habitual demands on the body will manifest into physical movement, which taps into the *known* and *unknown* (Foster, Albright with Gere, 2003). It involves the absorbent towards the *unknown* in which the result can be only gained through the intensive practice. Subsequently when engaging the *known* it demands a reflexive awareness when stereotype or the same movement insists upon the courage and intelligence to engage within the process *known* and *unknown* as performance unfolds. The coherent familiarity of composition principles embodied within the dance training makes the improvisation expressive and arrange into proper proportion or relation (Foster, Albright with Gere, 2003).

Human beings experience and understand their physical environment through sensory perception and its phenomena. An understanding of both elements of the phenomenon, perceiving and somatic awareness, is essential for this research. The dancer acknowledges the perceived object and becomes fully aware of the perceived experiences based on sensory stimulus. Through this embodied experience the manifestation of physical movement becomes consciousness notion of sensation. Maurice Merleau-Ponty in his book Phenomenology of Perception (1954) explains experience as a phenomenon of a notion of sensation. The perceiving experience is a state of the subject with understanding of received sensorial information. Maurice Merleau-Ponty (1908-1961) was a French phenomenological philosopher. His philosophy and state of thinking was strongly influenced by Karl Marx and a number of other philosophers such as Edmund Husserl

and Martin Heidegger. Karl Marx developed a method, which is socioeconomic examination of materialist interpretation of historical development as well as dialectical view of the social changes and their analytical class relations within the society (Curtis, 1997). The mode of production or in other words the form of economic organization, the material means of life in any society was basis for other major social phenomena to be developed such as morality and ideology. This condition had political social and intellectual process within its relationships among men. The world in which the society exchanged and used skills, knowledge, technique and tools was element in history (Curtis, 1997). The Marxism method had influenced Merleau-Ponty's scientific concepts and the fundamental role of an understanding perception in the world as well as how the human connect with the world. Merleau-Ponty was the major phenomenologist in the first half of twentieth century and his active engagement with science particularly in descriptive psychology influenced many scientists in the subsequent development of psychology and cognitive science (Lawlor with Teodvine, 2007). Merleau–Ponty uses the term of *sentir* to denote a sense-experience, which can be defined as elementary perception. "I might be said to have sense-experience (sentir) precisely to the extent that I coincide with the sensed, that the later cases to have any place in the objective world, and that it signifies nothing for me" (Merleau-Ponty, 1945, p.3). The functions of an object are grouping into a shape and the colour intensity establishes the background and outline of the perceived object. Because of the *knowing* of these functions, the expatiation of the 'sensory perception' forms the elementary perception. The meaning is already charged with its experience, because the object is perceived as a whole with its shape and background with the sense-given to the observer at that time. Therefore in this study, the dancer has sense of freedom of notion of impressions. Upon this perceived experience the dancer will explore the movement beyond the physiology of the stimulus. "It is the very definition of the phenomenon of perception, that without which a phenomenon cannot be said to be perception at all" (Smith, 1992, p.4). In another words sensory perception is always part of a bigger picture. Subsequently when the dancer is mentally ready for the experience of perception it, makes It an even far more interesting phenomena than ever. Because the dancer finds herself/himself within the phenomena the sensory perception is experienced fully and on a deeper level of *knowing*.

Upon the recognition of what is seen via visual perception, what is heard via auditory perception and what is sensed *(sentir)* it is possible to identify the qualities which sensory perception has. The explorations of perceived experiences enhance the sensation of perceived qualities. Merleau-Ponty explains further in his work that the sensation qualities are significant for the notion of impression, because they present meaning and form part of actual perception. Elementary perception is given because of the resubmitting of seeing, hearing and sensing. ”We make perception out of what we perceived” (Merleau-Ponty, Smith, 1992, p.5).

> We are caught up in the world and we do not succeed in extricating ourselves from it in order to achieve consciousness of the world. If we did we should see that the quality is never experienced immediately, and that all consciousness is consciousness of something (Merleau-Ponty, 1945, p. 5).

Therefore if the qualities of the objects into consciousness were not experienced immediately and not being consciously aware of, the perceived experiences would take a place in the exploration. The two common mistakes, which occur when experiencing perception, are: that the qualities became an element of a consciousness when in fact the object should be perceived *for* the consciousness and therefore is the incommunicatable impression. The second is the environment, in which the object is perceived, is controlled by the *knowing* of the optic (the visual field) and geometry and therefore it delimitated the perception (Merleau-Ponty, 1945). The visual field is a perceived segment of the world, which presents the image on the human eye, retina, within the visual parameters and defines the relationship between of size similar to those laying on the retina. When the stimulus is no longer seen the perception cannot determine the instant vision on that moment (Merleau-Ponty, 1945).

> The region surrounding the visual field is not easy to describe, but what is certain is that it is neither black not grey. There occurs here an indeterminate vision, a vision of something or other, and, to take the extreme case, what is behind my back is not without some element of visual presence (Merleau-Ponty, 1945, p.6).

The notion of attention is provided by the consciousness within the moment of perceived stimuli. Within this notion of attention, the truth of the object is discovered; it develops and enriches this notion. For example when the dancer perceives the geometrical object such as circle, he/she discovers that it is a curvy pathway. However in order to 'know' that it is a circular pathway the characteristic of the objects had to be already inputted in the dancer's attention. Therefore the new appearance of the object is seen to the dancer's eye and it can develop its perception (Merleau-Ponty, 1945).

The relative perception and knowledge is presented in the theory of multiciplity presented by Henri-Louis Bergson (1859–1941), a French philosopher of the late nineteenth and early twentieth century. His concept of multiplicity attempts to unify the contradictory features such as heterogeneity and continuity. The revolutionary recognition of this theory opens the way to a re-conception of community. This theory has two streams. One is what the theorists call Bergsonism and the other is phenomenology. Both streams are in oppositions to one another, because the phenomenology is concerned *to* unify the consciousness and the Bergsonism "the immediate data *of* consciousness" (Deleuze, 1991, pp. 115–118), is concern with a multiplicity. Therefore the two prepositions "to" and "of," proposed the basics in this theory of multiplicity. Henri Bergson's key work Time and Free Will: An Essay on the Immediate Data of Consciousness (1910) offers the understanding of consciousness as a freedom and therefore he proposes to differentiate between time and space as well as defines that the immediate data of consciousness are temporal, durational. He proposed that the experience of freedom is within the duration, because there is no juxtaposition of events. Bergson refers to the duration as a theory between time and consciousness; therefore duration is a qualitative multiplicity. He further explains that when closely analyzing a moral feeling such as sympathy. According to Bergson, when sympathy experience begins with putting ourselves in the place of others and feeling their pain, the

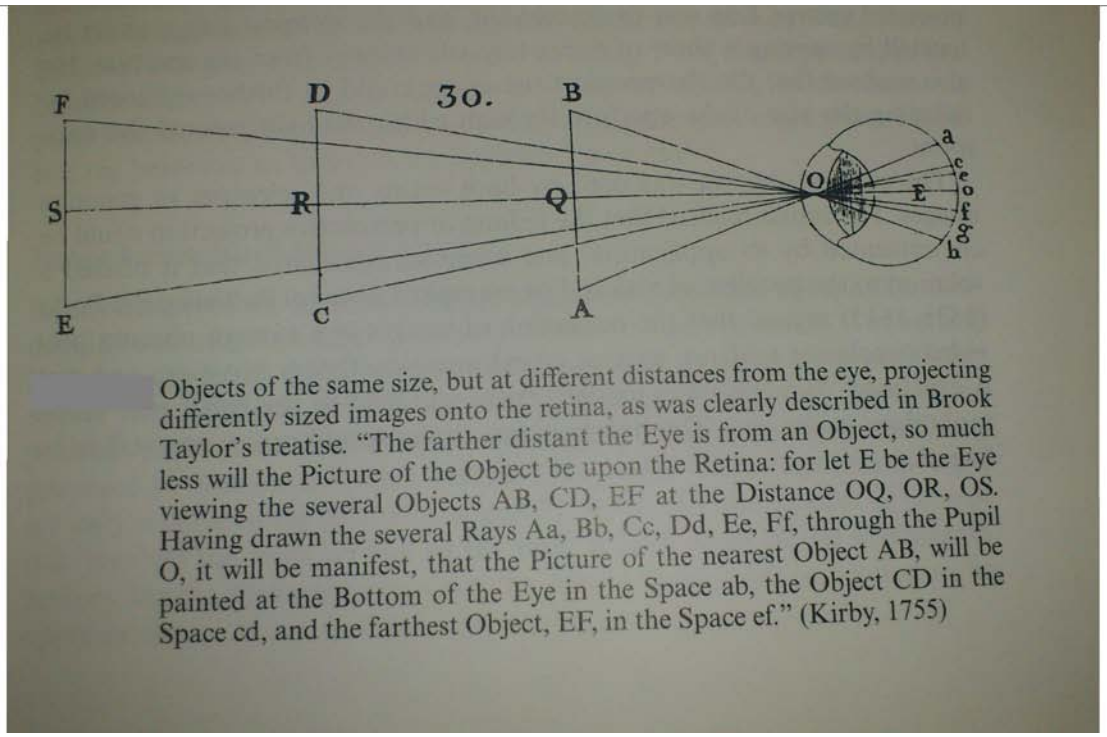
sudden feel of ‘need’ to help the suffering will empower. The reason being is purely the fear of, if the person does not help now, when he/she needs help nobody will help him/her. This is a good example to see that the qualitative multiplicity are heterogeneous and temporal (Bergson, 1910*).* As Bergson says, “The essence of pity is thus a need for self-abasement, an aspiration downward” into pain *(*Bergson, 1910, p.18–19). This painful aspiration develops the superior sense of being and therefore realization of management without certain sensuous goods made the person to dissociate from them. As a result of this the feeling of humility is part of the Bergson’s qualitative progress.

In contrast the quantitative multiplicity is homogeneous and spatial. For example: the analysis of a group of sheep shows that at first is relevant that they look alike. Despite their homogeneity each sheep is categorised by their spatially separated from others. Therefore each sheep occupies a distinctive spatial location. It can also be represented with a symbol, for instance, a sum of twenty-five sheep. Therefore there is no negation in the duration and qualitative multiplicity is heterogeneous or singularized as well as continuous or interpenetrating. It is also oppositional or dualistic at the extremes, progressive or temporal flow. The feelings are continuous with one another as well as interpenetrate one another, and there is even an opposition between inferior needs and superior needs. Bergson offers that it is inexpressible (Bergson, 1921). Bergson also presents the method of intuition. Intuition is a kind of an experience is guided by needs of the human intelligence. Therefore the knowledge it gathers is not disinterested; it is relative knowledge. Bergson calls “analysis,” as a process of gathering the knowledge, the dividing of things according to perspectives taken. As a result of analysis the comprehensive analytic knowledge of an object or an image is consists in reconstruction or re-composition by means of synthesizing the perspectives (Bergson, 1921).

Organic knowledge base is any tangible signals gathered and arranged according to some accepted coding scheme in order to represent information about the given body or object, which passes through the processing knowledge system. The knowledge system then governs the biological and psychological principles of the knowledge base to store, retrieve

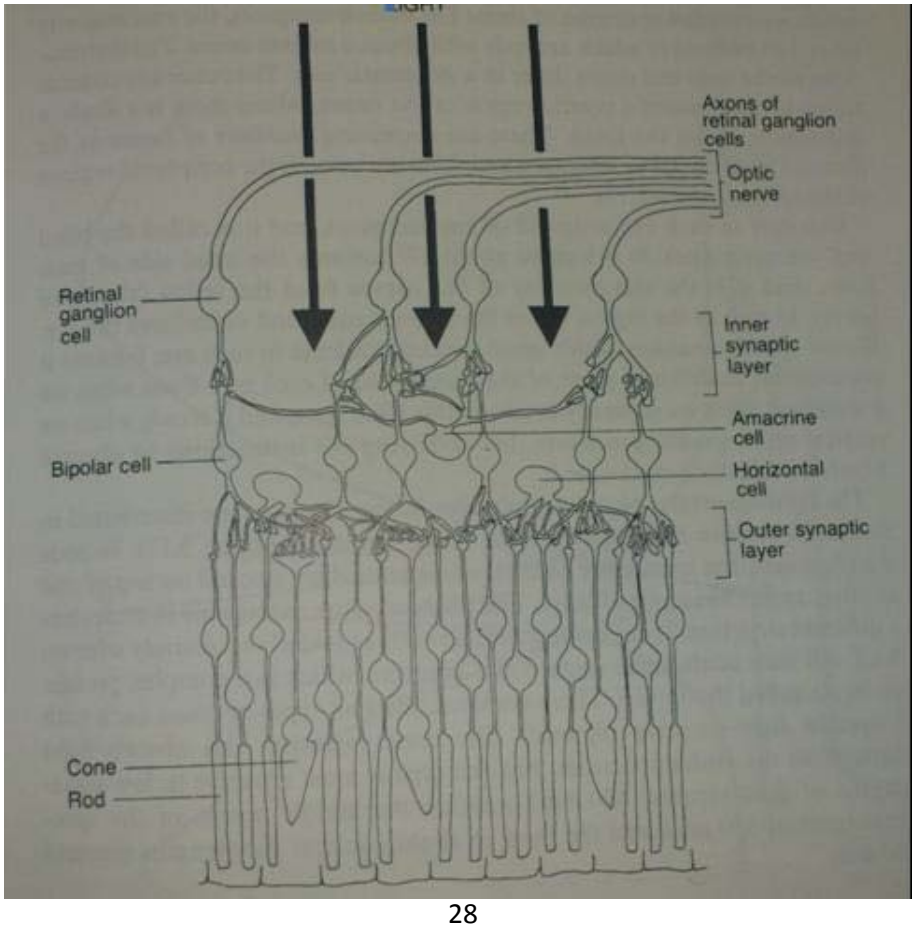
and erase the gathered information. Michael S. Gazzaniga presents a definition for cognitive neuroscience in the book Cognitive Neuroscience: A Reader (2000). The cognitive neuroscience is presented as “to attempt to discover the molecular logic of the organic knowledge base” (Gazzaniga, 2000, p. 11) with the respect of not being concern with non-changeable behavior within the knowledge base. In another words for example the inquiry in how the principles of living knowledge system are govern its behavioral characteristics in non-living matter. The compatibility of the definition can be met on various approaches within evaluation, ontogenesis, psychology and neurology of the knowledge base. The decisive factors for Gazzaniga, to support his proposition of the definition, are two applied approaches. The first approach is concerned with the changes of organism’s state of knowledge and then tries to demonstrate its results in changes of its thinking or behaving. The second one is proposing to concentrate on the various materials that are used in a task to see whether thought or behavior changes occur as a function of their familiarity (Gazzaniga, 2000). He then discusses that there are problems in naming the levels of description. The Artificial Intelligence Laboratory came up with eight levels of description of the operation for computer, which can be distinguished such as transistors, flip flops and gates, registers and data paths, machine instructions and others. Gazzaniga relates this to neurology and presents levels of discretion, which he believes should apply in brains of living being and computers. They are: transistors and diodes, or neurons and synapses, second level assemblies made from elements at level such as memories, adders and multipliers, third level the algorithm or scheme for computation and lastly the theory of the computation (Gazzaniga, 2000). The nervous system is very complex and therefore he explains that the levels of descriptions are important when studying the cognitive neuroscience as it helps us clearly define the definition of problem to the relation of the decisive factors. The neuroscience and cognitive science have the same goal to understand how the mind-brain works. In the past there has been large gap between these two, however with progressing of technology and research happening all over the world the gathering of information among scientists, which supports the co-evolutionary strategy within research domains (Gazzaniga, 2000). There are three levels such as levels of analysis, levels of organization, and levels of processing. The level of analysis presents a

framework which is concerned with the conceptual division of its phenomenon. It drew upon the descriptive definition of Artificially Intelligent Laboratory, for example the computational level of abstract problem analysis, the algorithm specifying a formal procedure to perform the task by providing the correct output of a given input and physical implementation, level of independent analysis of each algorithm and its physical implementation (Gazzaniga, 2000). Level of organization is concerned with the mapping of those three analyses and relates them to the nervous system, which is an organised structure at different scales such as molecules, neurons, networks and systems. Each implication has its own companion task description, which is structured and reflected in algorithms that characterise how the tasks are accomplished. And a level of processing is concerned with the levels of cells responding to sensory input, which reflects the degree of information processed. The level is assigned depending on the periphery distance. The cells in the primary visual area of the neocortex response to oriented bars of light, which are at a higher level than cells in the lateral geniculate nucleus, which are at a higher level than retinal ganglion cells. The sensory information reaches the cerebral cortex it increases through cortico-cortial projection into a multitude of parallel steams of processing (Gazzaniga, 2000). Figure 1. (Wade with Swanston, 2001, p. 47).



Objects of the same size, but at different distances from the eye, projecting differently sized images onto the retina, as was clearly described in Brook Taylor's treatise. "The farther distant the Eye is from an Object, so much less will the Picture of the Object be upon the Retina: for let E be the Eye viewing the several Objects AB, CD, EF at the Distance OQ, OR, OS. Having drawn the several Rays Aa, Bb, Cc, Dd, Ee, Ff, through the Pupil O, it will be manifest, that the Picture of the nearest Object AB, will be painted at the Bottom of the Eye in the Space ab, the Object CD in the Space cd, and the farthest Object, EF, in the Space ef." (Kirby, 1755)

This study is using the visual perception, the visual experience, which will distinguish what the eye perceives, is either factual or illusion. The visual perception is the ability of human eye and brain to perceived information about the objects and surroundings and the environment that is contained in visual light. This perception is also known as eyesight, sight or visual (Wade with Swanston, 2001). Perception is a fundamental psychological process in providing accurate information about the characteristics of world and environment in which the visual experience taken place. However visual perception is not necessarily always accurate but provides an index of optical illusion. The function of perception enables the human beings to interact with the objects and guide their behavior upon the interaction. Objects have shapes, size and colors, which seems to be perceived instantly through the eye sight and locate the object with respect to the observer. The human beings learn how to recognise the gathered tangible signals, known as the knowledge base, while is moving or being still, or when the objects moves (Wade with Swanston, 2001). Figure 2. The neural structure of retina. Please refer the quote below.

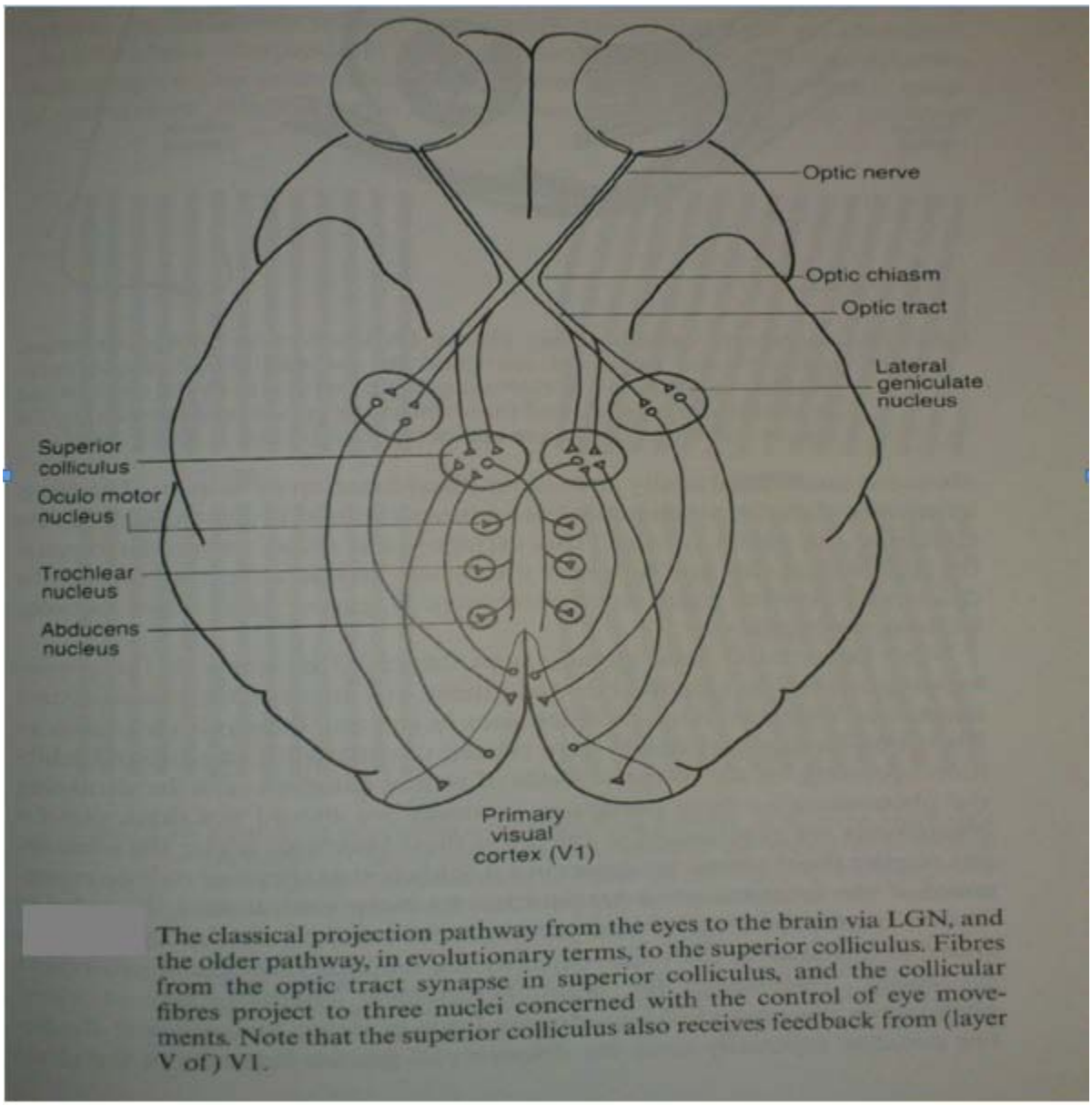


The neural structure of the retina. Light passes through the neural layers before striking the receptors (rods and cones), which contain the photo-sensitive pigments. The vertical organization of the retina is from receptor to bipolar cell to retinal ganglion cell. The horizontal organization is medicated by horizontal cells at the receptor-bipolar (outer) anlay and by the amacrine cells at the bipolar-retinal ganglion cell (inner) synaptic layer (After Cornsweet, 1970, p.107).

The senses respond to the external events are important function of the perception. There are different discriminations such as in color, size, shape, which then gives the action and recognition, visual illusion and development of the perception. This study uses the color discrimination, which is related to the receptors in the retina (Wade with Swanston, 2001). For example bees are responsive to the ultra-violet emissions so that the appearances of flowers do vary from the human perceived experiences. The spatial vision discrimination is an ability of the visual perception to distinguish details in patterns. Once again it varies across different species (Wade with Swanston, 2001). The visual perception of colours involves far more complex spatial and temporal effects. The physical and psychological description of colour is perceived on two levels and the link between them is in relation to the brain cognition (Gazzaniga, 2000).

The two visual hypothesis of the brain functions are accepted and influential model of the neural processing of vision. The two visual systems are ventral stream and dorsal stream (Khan, 2010, p. 60). There should be a relatively simple and straight forward link between what we see and what we do. Seeing can be described as the neuropsychological underpinning on the retina's responses to light, which results in change activity of neurons in either primary visual area (VI) cortex (Shall 2001; Khan, 2010). Believing is dependent on the nature of the visual information as well as informative elements collected from other sensory modalities and memory, which are then processed in the brain. This cognitive process is accurate with the multiple behavior phenomena such as intent, planning, goal setting and action (Khan, 2010). The integration lies in the neural information and proprioceptive information, which together arrived from external sources upon the

evaluation of the multisystem sensor apparatus. Therefore the movement planning is an exclusive retrogative of the visual motor system. Neural control parameters for motor control or movement planning are unlikely to subside (Khan, 2010). Therefore the role of the vision in the planning of goal-directed action is still in center of the debate. The ventral chain of areas the occipitotempoary cortex, which processes the information about forms, faces, colours and other visual attributes for the recognition of visual stimuli. The two visual pathways are relatively independent of one another with the interconnection within the stream (Khan, 2010). The tests done by Schiller, Logothetis and Charles in 1990, shows that the neurons from the M and P layers are mainly projected to the primary visual cortex or V1 (visual cortex level 1). Also the research into visual system was summarised by cognitive neuroscientist Zeki in 1992 and 1993, where according to his functional specialisation theory, that different visual functions are received in different parts of the cortex. For example V1 and V2 their involvement is in early stages of the visual perception, and the groups of cells are responsive to the colour and form before being relayed to the next specialised visual area. Also V4 is responsive to the colour and line orientation. The V3 and V3A cells are responsive to shapes of objects in motion and V5 cells are specialised to responds to the visual motion (Eysenkc with Keyne, 2000). As developed and indicated by Gazzaniga in 1998 that the “visual perception is a divide-and-conquer strategy” (Eysenkc with Keyne, 2000, p.49). and therefore it poses difficulties of combined integration about the information of an object’s motion, colour and form. (Eysenkc with Keyne, 2000) The complexity of this integrated information about objects is known as binding problem. The Tovée (1996) theory of oscillation-binding theory seems to occur when moving stimuli are visually perceived. His evidence suggests that the oscillations develop too slowly and last too long for them to contribute to object perception. He also argued that there may be less of a binding problem than has sometimes been believed. The other fact are that the there is only high visual acuity for stimuli presented to the fovea of the retina, which creates almost a tunnel vision effect. This tunnel visual effect means that the visual information from the centre of the visual fields is fully sampled and analysed (Eysenkc&Keyne, 2000).



The classical projection pathway from the eyes to the brain via LGN, and the older pathway, in evolutionary terms, to the superior colliculus. Fibres from the optic tract synapse in superior colliculus, and the collicular fibres project to three nuclei concerned with the control of eye movements. Note that the superior colliculus also receives feedback from (layer V of) V1.

Figure 3. The relationship between the two visual systems and the movement planning, influence the memory of the visual environment on real-line movement preparation (Wade with Swanton, 2001, p. 135).

Perceptual segregation is the basic element in visual perception. It is the ability of the human eye to perceive visual information derived from the object phenomena being perceived. The group of German psychologists Kurt Koffka, Wolfgang Köhler and Max Werthemier, who were part of the Gestaltists group, discovered the law of Prägnanz. The fundamental principles of perceived objects are thye perceptual organisation or grouping of possible several geometrical organisations of the object (Koffka, 1935; Eysenkc & Keyne, 2000). The other laws, which the Gestaltists group developed through experimental visual tasks are laws of approximity, continuity and closure. For example the vertical columns of circles objects are seen as the same rather than the horizontal line mixture of objects circle and square. Not only the two-dimensional static figures study, but also the moving visual elements which moved and grouped together were explored. The approximity theory was developed by Rock and Palmer (1990), two American scientists, who proved that the perceived approximity has happened in three-dimensional space on the retina and therefore later on after the depth perception. Approximity is a measure of distance to the perceived object. On the contrary Vecera and Farah (1997), two American psychologists, presented the evidence when conducted the overlapping experiment, that the result of the perceptual segregations was that the top-down activations, can potentially guide this process. Subsequently other relevant theories were developed, such as the Restle (1979), who studied in motion perception, by number of investigations and questioned the way how the display of moving dots across the space are perceived. He argued that the most complicated way is to treat and separate each moving dot individually according to calculation of starting position, speed and direction of the moving dot. Restle was able then to calculate the exact processing, which is involved in grouping of moving dots and it corresponded to what was actually perceived. Consequently Jules (1975), found that the visual display was perceived by the brightness and coloured perceptual grouping. The two regions were defined when the perceived brightness or wavelength of each region differed considerably. Also some exceptions applied in the notion that brightness and wavelength are important to analyse whether the consistency display of the two regions are perceived. Further explored the theory the granularity, which study, in which way the elements in region are distributed. All the elements can be distributed equally or can be all crumbed

together. He concluded that when the brightness is the same throughout the display and at the same time the granularity is greater in one half than the other, the notion is perceived as consisting of two regions (Eysenkc with Keyne, 2000).

Professor Sarah Rubidge, British dance academic, presents the theory of embodiment within her essay Embodying Theory (1998) as part of her PhD papers. Her theory is related to choreographic embodiment between the research and own practice, which have direct effect on theorizing and the choreographic practice. Through her PhD practice she created three works, one is a live theatre work, and two others are interactive digital works. *Passing Phases* (1996-8) and the *3over9* (1997) are multi-screen installation works for gallery. The difference between the first piece and second piece is that the *Passing Phases* were structured movements, however it allows the spectator to generate their own version of the work by activating the motion of the images when walking on pressure sensitive pads placed under the carpet. The *3over9* work was activated by the performers. It allows them to generate the motion of the digitised cast member and project on to the screens within the installation space. This work also has two sets of interactive strategies of music and images, which are triggered by the performers (Rubidge, 1998). This requires the detailed movement of the dancer such as air patterns, special awareness and speed of moving body. The elevations of the moving body as well as the moving away and towards the screen, triggers the sound, which is then put into composition element with the real time sound. 3over9 created an interactive system for the performers in which the structured improvisation accumulates compromises of the kinetic structuring devices and operational rules. The dialogue between theory and practice of Sarah Rubidge's work is very much similar to this study of sensory perception and its embodiment with the real as live, and virtual as digitalised environment (Rubidge, 1998).

The modes of interactivity promote any useful modes of political and social interaction among their users and audiences. In the early years of the twenty-first century the cultural shock was provoked by the development of new media technologies within western society. In the context of the technological revolution the responses and assumptions that

have accompanied this revolution in the early stages, Doctor Alec Charles a British media academic, says that it is very similar to the characterization of the elements of the new media in the early twenty-first century. Charles in his book Interactivity (2012) refers to the Robert Huges, the art critic, quote: “The speed at which culture reinvented itself through technology in the last quarter of the nineteenth century and the first decades of the twentieth seems almost preternatural” (Huges 1991, p.15; Charles, 2012, p.2). Charles discusses the beginning of the transition process of new generation ‘digital natives’ .This term is presented by Palfrey and Gasser in Born Digital: Understanding the First Generation of Digital Natives (2008), which means that the generation interacts with the new technologies in such a way that it will transform the global politics (Charles, 2012, p.2). Charles further presents the theory on the paradox of interactivity:

> It is about the way in which the declarations or illusions of heightened interactivity advanced by new media technologies and applications offers users a deceptive sense of their own active participation in political and social processes, and thereby undermine users desires and potentials for actual, meaningful and impactful engagement in such processes (Charles, 2012, p.3).

Charles further explains that new media such as communication and information technologies are used as a facilitator. The problems derive when the user sees them as a solution (Charles, 2012). The individual dancers or performers contributed to the creative process with their skills, knowledge and creativity to ‘make the dance’ (Popat, 2009) in a collaborative way. The dancer becomes the medium and interacts in the real time and real space (Popat, 2009). The interactivity has to happen equally between the dance and its physical body as well as the technology (Popat, 2009). The virtual society such as electronic government, digital plays, reality television and online networking, do create a world with empty fantasies of virtual games and parallel it with the prevailing condition of absurdity experienced of the real world (Charles, 2013). The use of new technologies within the world of games approximates known notion of the real world, which is less important than the degree to which the additional material world look alike the hegemonic

game world. This empowerment, which is generated by the virtual environment, gives the user an impression of independence that fails to register. It constrains and influences the user within the resistance placed in the world of games. The blurring offline and online individualistic characteristic of the world, the real and the virtual self, happens through “permeable border” Boellstorff (2008:121) (Charles, 2012, p.70), which means to be closer as to the real self. It therefore suggests and creates the problem in the true identity of the user as the virtual self becomes the primary factor of subjectivity within the two modes of being. “The illusion of empowerment that recruits us, that seduces us into dropping our resistance to our assimilation and disempowerment” (Charles, 2003, p.67). It is acceptable to blur these two notions as far as the existence of an *a priori* subjectivity is relevant to the user. He also presents that there is no difference between the material and virtual experiences. It is just that the users are familiar with the word ‘virtual’ in illustrative forms of mediated experience by the evolved technologies (Charles, 2003).

Today’s culture is dominant through mediatized representation such as development in televising i.e.broadcasting and reality TV, development of video and social medias. Auslander says, that the early history of the relationship between television and theatre recapitulated the relationship between the live and mediatized. The relationship between the live and mediatized were characterized with elements such as presentation of a previously recorded live event, the incorporation of video into live performance as well as the precedence of the mediatized over live (Auslander, 2003). In the 1870s Steele MacKaye developed the proscenium adjuster, which was a technical innovation for the stage which anticipated cinematic techniques (Auslander, 2003). This device could instantly change shape and size of the opening and enable smooth transition between scenes. Therefore he could control the type of the stage with its long and medium shot as well as panoramic and tracking shot (Auslander, 2003). However the appropriate technology needs it to create the cinematic experience (Auslander, 2003). The reflective theatrical practice had an influence on the early cinema. The editing and development of staging was linked with an aim to represent the new means of theatre. Cinema attempted to be theatrical and therefore it reformed the theatrical vocabulary and was the dominant

form in entertainment. On the other hand film had in retreat theatre practice by 1926 and television had still time to find way how to pillage theatre (Jacobs, 1997, Auslander, 2003).

Television embraces the theatre art as a model for representing action (Spigel, 1992, Auslander, 2003). Previously cinema had attempted to be theatrical in its early development in the same way as television. The early appearances of television were understood as ontology of *liveness* the ontology of theatre, rather than to the film (Auslander, 2003). Television ability is to transmit events as they occur and all broadcasts were live. This definition is argued by Jane Feuer (1983) where televisions as an ontological live medium, still have presence of the original conceptions of the medium, and therefore and its current in an ideological sense. And Rick Altman (1986) has a similar view, where the television experience itself have sense of live event by the viewers, when live or not live event is transmitted. The grown of televisions within the society with industrial development between 1939-1945, predominantly in the United States, were reduced during the World War II. Despite the war the discourse on television kept its lively broadcasting and was characterized by experimentation, speculation, and debate (Auslander, 2003). However there were still arguments about the discourse such as whether television is a hybrid of existing forms or a new complex of existing arts (Burger, 1940). Early writers then agreed on the definition of discourse that the television as a medium is immediacy and intimacy. Auslander then offers another concept on *liveness* that live performance, which has developed the replication of the discourse of mediatization. Another view on this is offered by Vsevolod Meyerhold. The Soviet theatre director saw the sound film as an attempt by the cinema and competing with theatre. The replication of television, video and film in which to incorporate digital media provide dramatic examples (Meyerhold, 1969, Auslander, 2003). Subsequently Auslander says: “Live performance now often incorporates mediatization such that the live event itself is a product of media technologies” (Auslander, 2003, p.24). Therefore the phenomena of new technologies remediate the old ones, and film and television remediated theatre. The multiple ways in which live performance now accomplish to replicate television, video and film such as if electronic amplification is used, to some degree it can be counted as a mediatization.

Therefore what is perceived with the auditory senses is the vibration of a speaker, reproduction by technological equipments and sound pitched up by a microphone, which is not the original acoustic event. This effect has been intensified for example at a football match, live concert or live comedian stand up, on a large television screen or monitor screen (Auslander, 2003). This changed the overall audience experience of watching the live match, performance or event from the big video screens, when sitting right at the back of the arena or theatre. This way the spectator can see the live event with additional elements such as close ups, instant reply, and other, the “simulacast” (Auslander, 2003, p.25), which was once understood as secondary elaborations of live original event. However now it’s all embodied and constitutive of the live event itself. The theatre and live performances had improved incursion of media technology by using life feed video screen display on a big screen, which gives the opportunity to show interviews during the live performances of for example an orchestra. This genre developed and DVD offers the experience somewhat like a live performance. Audiences expect live performance to resemble mediatized ones. Theatre today has been advanced on television (Wendall K. Harrington, Auslander, 2003, p.26). The audience not only seeing live performance but also having experiences and modeling their responses to the life event of those of mediatized theatre (Auslander, 2003).

Digital media such as CD-Rom, software, and the internet offers endless and innovative possibilities of contribution to the creative process within the arts and dance. The traditional approaches to choreographic process have been affected by these developments. Digital performance has given new direction and innovative ways of thinking and making performances more interactive (Dixon, 2007). Practitioners not only use existing digital media in their performances, but some have created original software, which is developed specifically to support their individual choreographic process (Dixon, 2007). During the 1990’s the new works of digital dance were mainly seen by enthusiasts and witnessed at the special e-listings and conferences. Wayne McGregor was one of the five professional practitioners who collaborated with digital artists and programmers on the ‘Software Dancers Project 2001’ (Dixon, 2007, p.206), which was led by Professor Scot deLahunta.

They discussed in what ways the computer might specifically aid the rehearsal process. The second conference was led by deLahunta and Professor Johannes Biringer, New Performance Tools: Technologies /Interactive Systems in 2002, which brought together international professional artists to explore the interactive tools and computer controlled systems and its practical and conceptual implications within the live performance and virtual environments. At this conference the software *Isadora* developed by Mark Coniglio was first presented and allowed the valuable sharing of the experiences and research in progress. Not only do the practitioners use the digital media in their performances, they also have a trend and objective to write and create original software, which is supporting the choreographic process. The lack of technical expertise in code and programming skills does often limit them. However it does not discourage them in developing some applications and their influences on the use of creative adaptation of software such as Max/MSP. Another very useful and fast developing tool for those practitioners are desktop dance simulation programs such as *Dance, Compudance, Dance Manager* and *In Motion,* just to name a few (Dixon, 2007).

Since 1937 a group of artists were experimental and innovative in respects of their art works, culture and politics. Merce Cunningham (1919-2009) was a dancer, choreographer, practitioner and a leader of the avant-garde period for over fifty years. Cunningham was considered an important choreographer of all time. His work was innovative and he developed his methods into contemporary visual arts and performing arts. His influence in modern dance and his collaborative works with musician and composer John Cage (1912-1992) gave him new sense of directions within the dance choreography. He embraced the idea that dance and music should be able to exist independently from each other within the same time and space. He developed the ‘of chance’ method in developing choreographing phrases and his contemporary technique, which is taught around the world as part of the academic dance training, is designed to create strength and flexibility in body and mind as well as to challenge the dancers ability of changing direction within the body and in space. Cunningham started using computer technology in his work during the 1990’s (Dixon, 2007). One of the earliest popular software packages developed by Cunningham and used

by many choreographers was *Life Forms Dance Software.* This software makes use of a dance figure stimulation and animation for the purpose of choreographic creation. This programme was used in Cunningham's work *Cyber Dances* with *Life Forms* (1997), which enabled him to use the computer as a drawing board to create movements and sequences as preparation for the choreographer before he went to the dance studio with live dancers and it enabled the animations themselves to become dancers either projected onto the wall in performance space or as a discreet movie within the performance. The development of motion capture hardware and software was quickly integrated by Cunningham. He used motion capture and Character *Studio* software in his work *BIPED* (1999). The dancer's bodies were covered by taped little balls, which were actors of reflective nodes and detected as well as traced by cameras placed all around the dancers space. The moving balls on the dancer's body provided feed back to the computer and on the screen; the software generated images in 3D kinetically dance animations. The images were then manipulated to create complex hand-drawn figure animation performing the same dance as the live dancers. This was projected onto the large theatre backdrop during the live performance, which allowed the dancers to interrelate with the virtual bodies. For this aspect of this piece Cunningham collaborated with Shelley Eshkar and Paul Kaiser, the digital artists, on a previous work *Riverband, Hand-drawn Spaces* (1997). Cunningham's innovative approach to choreography and his interest in what the virtual body and images can do, contributed to the development of other digital media in digital performances (Dixon, 2007). This research will be drawing on the processes of the digital art installations. The dancer's physical movement will be simulated through use of Isadora software and using graphical animations representational of the dancer's body within the digital performance.

Another great practitioner in this field is Wayne McGregor, a British choreographer in contemporary dance. His company Random Dance is one of the leading companies in the United Kingdom. The company creates work, which cooperating digital technology into their performances. McGregor's works are exploring the complementarily between live and virtual bodies. The multimedia trilogy *Millenarium* (1998), *Sulphur* 16 (1999) and *Aeon*

(2000) are based on the elements of water, fire and air (Dixon, 2007). These works are accompanied with virtual bodies and computer generated graphics, which presented uplifting and mesmeric theatrical of virtual and live performers on a dance stage. The piece starts with a very large image of a solo female dancer with a shimmering editing effect, projected onto fine gauze scrim at the front of the stage. When the lights brighten it reveals the live dancer at the centre of the stage, who in comparison to the large digitised image, is much smaller. After that two other virtual dancers appeared and performed a duet. Through editing process of the used software the two dancers create an illusion of stepping to one another's bodies, while moving inside and through one another. McGregor pushes the boundaries of his choreographic concepts of body, time and space into new dimensions, often 'alien-like' (Dixon, 2007, p.234) physical vocabulary in his work Nemesis (2002), which mixing the personal, the organic and the mechanic notions.

William Forsythe is the artistic director of The Forsythe Company and choreographer, who created pioneering interactive performance CD-ROMs *Improvisation Technologies* (1994 and 1999) with Laurie Anderson. The Forsyth company collaborated with Supreme Particles (1995), an electronic performance group, and created the interactive choreographic system call *Binary Ballistic Ballet* developed for ballet piece *Eidos:Telos,* which had three parts. In part one the dancers were moving from their predetermined choreography. The data was selected by computer from a database and changed their shape, color and movement. The dancer reacted and responded to the displayed images and created new dance patterns from a stimulus unseen by the audiences. Both dancers and images are visible to the audiences in part two, where the computer was used to create *Interactive Creatures* (Dixon, 2007, p.200), which interacted with the incoming sound. The constant interplay of dancers and creatures created complex geometrical shapes. *Kammer/Kammer* (2003) work began the "hybrid dance, film performance and theatre" (Dixon, 2007, p.208). Forsyth's created this work with focus on a filming, live streaming and staging the scenes with continues movement of the partition walls creating flats and temporary spaces, props and moving dancers from scene to scene on the stage. The dancing was not the primary factor of the piece. The filming took place in the parts of

the stage, which were at some point visible to the audiences and at some point hidden. When the scene was hidden the live streaming of the dancers were projected onto the large screen for the audience to see. One of the robot cameras was suspended above the stage which made the special disorienting effect projected onto the screen (Dixon, 2007).

The involvement of digital media within the digital performances of the twentieth-century enhances the engagement interaction between the performer, participant and the creator such as researcher or practitioner (Popat, 2006). Similarly most practitioners' uses software for choreographic purpose is concentrated on creating and generating of movement and not the latter phase of the choreographic process where movement material is shaped, edited and reworked into a continuous structure. The technology can be used as a tool for the creation of the work and can provide a range of interactive possibilities for the practical process of this research. In this study Isadora software was used for the purpose of embodying the moving body with the technology. This software developed by Mark Coniglio is much improved version of the earlier software programmes *Interactor* and *Minidancer* developed by Mark Coniglio and Mort Subotnick in early 1989. Isadora allows audio and video media manipulation such as speeding the tempo, rewind the video as well as visual distortion of images. These two elements of the software are very important for this research. Since the software has been developed a number of dance artists, choreographers and installations artists use it in their own works as part of the 'digidance community' such as Troika Ranch Dance Company in their piece 16 [R]evolution (2006) (Dixon, 2007). The reason why Isadora is important to this research is that it operates on two different levels in the practical explorations. Firstly the software is used with visual images and sound which are pre-recorded and secondly the software is used to explore the ways in which motion can generate live interactive visual media. The use of visual media within Isadora enables to compliment the dancer during the choreographic process. The aim of the practical exploration was to explore the ways in which both roles of technology and the live dancing body can play an equal part in creating and finding new ways of generating performance material.

Research Methods and Practical Processes

The first part of this chapter will introduce different methodologies, which support the process of the practice as research and practice led research approaches. The dynamic model modes of knowledge are part of the practice as research process. This process is a form of academic research, which incorporates the modes of practice within its methodology. The 'practice-led' research is adopted within the creative arts as an approach to support the studio-based practice through the practical sense or as a research in the modes of observation of other researchers. These models of research approaches sit within the academic argument. Through embodied knowledge of the practice the research approaches are affected and developed the theoretical underpinning for this study (Nelson, 2006). The practical tasks were undertaken by a dancer's exploration in order to explore the role of sensory perception within improvisatory context. It will also explore the technology used in this study and it explains how the Isadora software was used as an explorative tool. The second part of this chapter will look into emerging the methodologies into practices and it will highlight the established methods, which were structured within the practical explorative of this study.

Anna Halprin, a dancer, and her husband Lawrence Halprin, a musician, together developed a model for understanding collaborative creative processes. Halprin is a dancer and choreographer who played an important role alongside Trisha Brown, Yvonne Rainer, John Cage and other practitioners in the formulation of American postmodern dance in the 1960s. She created a community practice based on the fundamentals of the postmodern dance, which gave her and others a sense of freedom. This guide is call RSVP Cycle, where each letter stands for certain elements and factors, and therefore effect researches during their explorations and collaborations: (R)esources such as basic materials, physical materials, ideas, people. (S)core which gives the instructions for the work it can be open, closed or outlined. (V)aluation of the work such as feedbacks, analysis and value of

decision making during the creative process and (P)erformance, which is accomplished by applying all of the above. Each stage is part of micro-cycle and do not have to be applied in this order. This cycle was mainly for the purpose of musician students; however it can be used in dance, art, visual art and other suitable art forms (Halprin with Kaplan, 1995). The discovery is made when all stages of this creative process cycle are consequently evolving upon on development of each individual stage, which is evident in this research too. This RSVP cycle remains at the centre of Halprin's practices and beliefs. This RSVP cycle has two cycles within its process, one which is self-inner cycle and the other is collective-outer cycle, therefore all together this is part of one creative process, please refer to the below figure 4. of Halprin's RSVP cycle describes the multi-dimensional and moving inner and outer cycle (Halprin with Kaplan, 1995, p.125).

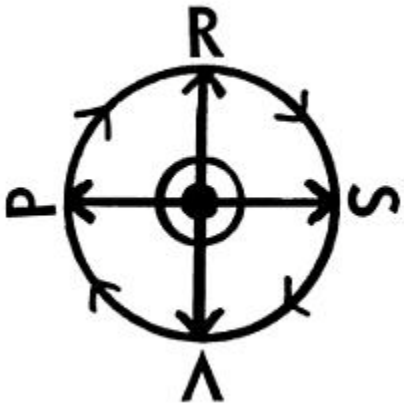


Figure 4.

Another communicative process called Active Listening was developed by two American psychologist Carl Rodgers (1902-1987) and applied by Thomas Gordon (1918–2002). The process aided the needs and feelings of both sides of a conflict to resolve and to find a solution through mutual participation. Halprin explains that this active listening process helped the dancers to find common ground when creating movement in their partner works.

Those two tools, RSVP cycle and active listening, gave the dancers a sense of involvement and participation (Halprin with Kaplan, 1995). Peter Abbs, English poet and academic of creative writing, introduced the ideas of the creative cycle in his book Symbolic Order: a contemporary reader on the arts debate (1989), where distinctive stages within the cyclical creative process are identified. The cycle starts with the impulse to create, with progression into working within the medium and upon the realisation of the final form to present or perform and followed by response and evaluation and back to the beginning of the cycle (Abbs, 1989). Although this is a cyclical model, of course, the first initial idea to want to explore and to create must be present. The subject matter may have an effect on what medium is used in the process and vice versa the medium may have the intense effect on the way the artist works. In the context of dance Professor Sita Popat, British dance academic suggests, the creative process is initiated from the dancer and their physical body as well as the choreographer (Popat, 2009).

The practical research undertaken for this study draws on Robin Nelson's Practice as Research (PaR) Modes of Knowledge. This model highlights the knowledge based understanding as part of the researcher's practical explorations. This is part of the PaR framework, which can be adaptable across other disciplines. This model is presented by Nelson in his easy *Modes of PaR knowledge and their place in the Academy* in the edited collection Practice-as-research in performance and screen (Allegue, Jones, Kershaw, Piccini, 2009, pp.112-130). The Modes of Knowledge process (please refer to figure 5)**,** represents the cycle within the research process and is focused on researcher as practitioner. The strategic idea of this dynamic model, in which the potential starting point can be anywhere within that process, is that the research trajectory spirals and develops the cycle process. The key elements of the model are practitioner knowledge, critical reflection and conceptual framework (Nelson, 2006).

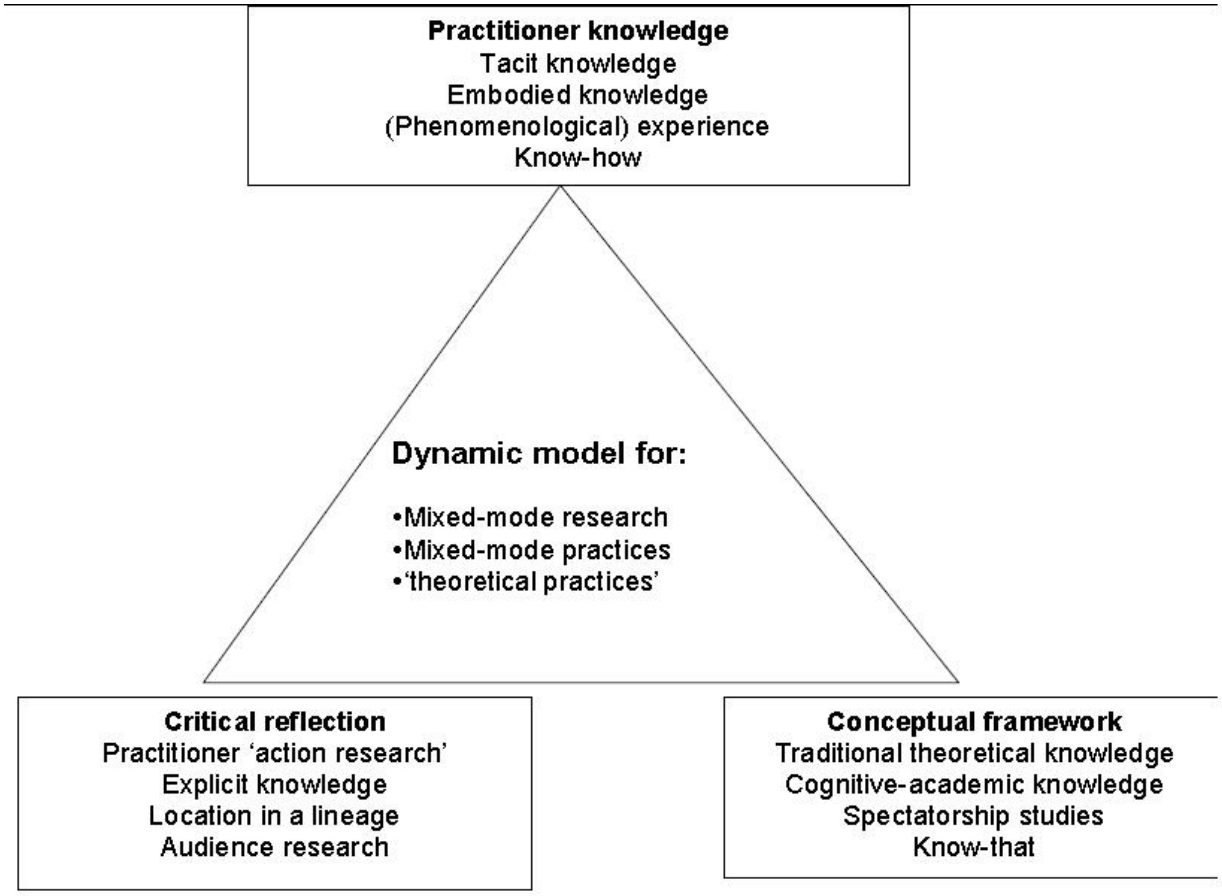


Figure 5: Robin Nelson Mode's of Knowledge (Nelson, 2006, p.17).

This triangulation approach to the model's data sets is derived from the social sciences and has been applied to the arts and media by Nelson in the Practice as Research PaR context.

Thus the model has been developed into a dynamic model for process, cross-referring different sources of testimony, data and evidence in a multi-vocal approach to a dialogic process. The product sits in the centre of the triangle (Nelson, 2006, p.18).

PaR is a form of academic research, which uses practical elements within the methodology or research output. Practice as research in Performance (PARIP) project is a five year project led by Professor Baz Kershaw and the Department of Drama: Theatre, Film, Television at the University of Bristol, in which Nelson took a part together with other academic such as Angela Piccini, Caroline Rye, Barry Smith to name few. They undertook the research in range of practices such as conference events and discussions and related forums. Through this development of the project the PaR model has been established (Nelson, 2006). The project aims were:

> It has conducted specific projects and their documentation; it has fostered an environment in which PaR projects might be undertaken with increasing confidence of their recognition; and it has engaged debate within the arts community and between the arts and other academic disciplines about the place and status of creative practices as research in the context of Higher Education (Nelson, 2006, p.1).

This is mainly explored within the arts and humanities with variations such as practice-as-research, practice-based, practice-led, mixed-mode research practice and practice through research. The practice-led research and its connected links to practice-as-research, practice-based, are employing the arguments of each practice, which then overlaps and connect together. It indicates that the creative work is part of the research approach and forms the generatic detectable research outputs. It also suggests that the creative practice can lead to specialised research insides (Hazel&Dean, 2011). For example Sara Rubidge's creative work of interactive digital works emerged through the 'practice-led' research. Through practical explorations and applying her training and specialised knowledge in which she engaged the elements of PaR and analysis of the findings emerged into the theoretical research output of the Embodying Theory (2011). Consequently Robin Nelson during his research into the PaR, through the practical experiences and applying his specialised knowledge, he developed the Modes of Knowledge method.

> The notion is that such people might best be persuaded on their own terms. But, though my mode of expression may affect objectivity, traces of my own passions and interests in a commitment to research and knowledge production through arts and media PaR are evident in the texture of the writing which is, of course, itself a material practice (Nelson, 2006, p.1).

The mode of knowledge model provided by Nelson and its dynamic development, which engages a 'multi-vocal' (Nelson, 2006, p.18) approach such as cross referencing different sources of data and evidence, into a dialogic process, is situated in the centre of the triangle. It is a constant flow from one to the other, which creates the cycle and contributes to the creative process. At the top of the triangle sits the practitioner's knowledge, which includes embodiment as a key feature of the research practices, the implied knowledge which is gained through training and experiences as well as the 'know-how' to make work. For example in this study the researcher is drawing upon established theoretical frameworks, as well as upon the previous training experiences and connections to practice, which is always embodied and tacitly acknowledged within the process. The developments of breaking the boundaries of traditional codes and conventions in ways of working, they are not always brought forward as part of the evidence in research, because it might prevent the research study to meet its full potential (Nelson, 2006). Another element of the model Modes of Knowledge is critical reflection. The critical reflection might be informed by the relations of work within the research is undertaken by the researcher. The creative work is manageable and organised within the established practice, in this study is between dance and digital media practice. Therefore the critical reflection is located in a conceptual framework as well as the embodied experiences and theoretical knowledge the research applies into the making and critical reflection processes (Nelson, 2006). The documentation of each part of the practical research is very important to ensure that research outcomes can be evidenced and made both shareable and applicable. The documentation techniques used in this study are a video diary of the practical explorations, written feedback from the dancer who participated in the explorative creative tasks and pictoral documentary evidence. Other forms of documentation include the researcher's notes, which reflect the methodology and theoretical underpinning for this study (Nelson, 2006).

The critical reflection within creative process operates within or reacts against the established discourses of academic enquiry, for example some research prefers to work in the office some researcher conduct their research outside the usual academic setting. Therefore critical reflection is located within the conceptual framework, which the researcher uses in the making and critical reflection process. The broader context of conceptual frameworks is acknowledging the traditional theoretical underpinning within the research process as well as the newly explored theories and methods, which become part of the innovative process. For example in this study the Feldenkrais theory of awareness through movement method is used in the practical explorations. The use of this method enables the dancer to be aware of her/his kinetic abilities in relation to the perceived visual image encountered within any given particular task. As a result of the practical explorations, the dancer will become aware of her/his movement and discover new ways of moving through the technologically mediated environment. Therefore the knowledge of this method will become an overtly cognitive academic practice (Nelson, 2006). The creative process can then become dynamic and creates three types of research: mixed mode research, which incorporate qualitative and quantitative approaches; or mixed practice methodological approaches such as measuring, data collection and their analysis; and theoretical practices upon development of conceptual schemes. Nelson also further explains that each stage of the process of PaR within the triangle makes a potential knowledge-production process. The mode of knowledge model indicates a dynamic inter-related process, which suggests that it can travel in either or both directions between the three points of the triangle (Nelson, 2006). Therefore the collaboration and interaction between theory and practice within the construction of research processual knowledge are in some level interactive, this is relevant within this study as interactivity is a driving feature of the creative practice as well as the academic research. It is important to establish the range of applications of the notion of interactivity within this study. All art is interactive between the viewer and the art work, however sometimes it is more about the continual questioning of the perceiving art object rather than direct causal impact of the spectator on

the materiality or performativity of the object. Digital interactive artworks have been a significant presence within western contemporary arts practices within the twenty-first century. Digital art performances offer the user or audiences the opportunity to engage physically and mentally, to contribute, to build, to affect and change the work itself. It is almost like a playground for the viewer and they choose to play or stay still (Dixon, 2007). Sita Popat in her book Invisible Connections: Dance, choreography and internet communities (2009) describes that *Interactivity* is as a primary process for the creative process. She further explains that Interactivity has a sense of 'being involved' from the very beginning. It is a two way process such giving and receiving information upon and reaction to the medium (Popat, 2009). In other words the research and dancer have to be involved in the interactivity between the research question, embodied knowledge and experiences as well as engaging with the technology right from the beginning. If interaction is the main purpose of a creative process both parties, dancer and researcher, need to feel involved all the way throughout the communications takes place. The impulse to create is closely related to the intuitive creation and logical method within the process. All participants, the researcher and dancer engages in a creative process where each individual contributed the creative process with their skills, knowledge and creativity to 'make the dance' in a collaborative way. The dancer becomes the medium and interacts with the environment in real time and real space. The interactivity has to happen equally between the dancer and its physical body as well as the technology (Popat, 2009).

The use of improvisation techniques is absolutely related to the interactive characteristic of many digital art works. In this research project improvisation is used as a devised technique to engage in practical explorations. Upon the development of the understanding of improvisation it influences new possibilities of the interactive approach as a key generative methodology. Improvisation in dance has become a key part of theatrical western contemporary dance. It became a key feature of the construction and aesthetics employed by pioneers of postmodern dance in America in the 1960s such as Steve Paxton, Yvone Rainer, Trisha Brown and Anna Halprin (Banes, 2006). Contact improvisation is a dance technique and method developed by Steve Paxton. This method of improvisation is

mainly explored and performed as a duet. The duet improvisation, as it's been refined by Steve Paxton practice, can begin with silence and dancers supporting each another's weight while in motion. This technique uses the momentum of the partner's weight transfers, rolling, suspending and lurching together. Contact Improvisation is a constant flow of energy, which supports the dancer's movement invention. It also allows the increased improvisational options and choosing the momentum, when the dancer decides to perform it (Novack, 1990, p. 118). The purpose of Improvisation is that the dancer simultaneously originates movement without pre-planning. "The dancer simultaneously originates and performs movement without preplanning. It is thus *creative* movement of the moment" (Blom with Chaplin, 1982, p.6). Therefore it is a creative movement in the moment, which allows spontaneous reaction, creation and subconscious exploration in movement of the body. The kinetic self engages with the impulses and flexibility of the movement in real time (Blom with Chaplin, 1982). Human movement comprises gestures, reflexes, posturing, accommodating maneuvers, random actions as well as complex articulations, and practical and aesthetical patterns. Movement is both expressive and practical (Blom with Chaplin 1982).

> As instinctive forces, intuitions, rhythms, and passion drives our bodies response to unspoken needs and desires, interpreting and continuous flow of internal and external signals and determining the appropriate form of action. The neuromuscular system – muscle contraction, nervous stimulations, touch sensetation, adrenaline formation, muscle fatigue, oxygen depletion – provides parallel flow or feedback along with our sensitivities to gravity, pressure, breath, tension, and verticality (Blom with Chaplin, 1995, p.3).

Movement is an action with a purpose, where the human body changes its shape, speed and the quality of its flow and energy in space and time. To move is either a conscious decision, an instinctive motivation or a physical need. In everyday life individuals recognise certain lines, shapes, sizes and colours, which can be identified and received as meaning messages through constant and repeated use and exposure (Winearls,1990). "The senses

provide us with the means for receiving information from the environment and from within the system which acts as a stimulus for action" (Winearls, 1990, p.33).

Improvisation is also seen as a communicative tool and an aspect of movement when dancers engage and interact with technology (Blom with Chaplin, 1982). Although improvisatory movement responses are produced in real time, there is space and opportunity for reflection, however that might change and affect the real and primary response as well as creation of the movement at the given time and space in which it occurs (Popat, 2009). Consequently the dancer must know their ability for movement and the bodily experiences from within. The dancer learns to understand the modes of creativeness through the early stages of life and continue to develop their perception through practical elements of the lived experience. As Alma Hawkins describes:

> Creativity is a private affair. It is the process of rummaging through and penetrating the intimate world of accumulated memories, thoughts and sensations down to the very nature of being. If the process of creating does not begin at the source, it stands the dancer of becoming a surface experience resulting in a superficial display (Hawkins, 1991, p.vii).

Hawkins in her book Moving from Within: a new method for dance making (1991) describes her understanding of creativity and movement as a means of experiencing and communicating feelings, inner-self. She set herself on a journey to discover and to play with the idea of movement, which could have the power to evoke an aesthetic response. She concentrated on the aesthetics of choreography and the choreographic process. Her focus is on the way of facilitating a learning environment that encourages individuals to develop their creative potential. This liberation frees the dancer to experience and to discover the inner-self in order to manifest in external form to the dancer's inner vision. (Hawkins, 1991) She adds on "The emphasis is on process rather than product" (Hawkins, 1991, p.2). Hawkins focused on how each individual perceives the world and is encouraged

to interchange between the inner lived experience and the outer phenomenal world. The constant flow of sensory input from the outer world such as visual, aural, tactile and kinaesthetic actions allows the dancer and every human to experience the outer world. Hawkins suggested that “sensory input sets up an inner stimulation to act” (Hawkins, 1991, p.5). The early experiences of cognitive perception provide the foundation for the creative process, which helps to discover and understand various components of its phenomena. The individual must find his/her approach to images and movement tasks, which “assist in the discovery of movement as means of expression” (Hawkins, 1991, p.18). The idea of inner stimulation is supported during the improvisation and exploration by the dancer/mover through generating and developing the movement while interacting with the sensory inputs, which are presented in front of the dancer (Hawkins, 1991).

McGregor and his dancers were involved in Professor Jon May’s experimental research, which he included in the essay Points in Mental Space: an Interdisciplinary Study of Imagery in Movement Creation (May, 2011). This research was conducted in collaboration between cognitive scientists, neuroscientists and dance artists. The research concentrated on examining the mental representations used to support movement creation as well as developing tools to enhance the choreographic process. May conducted this research with focuses on the motor responses with subjective reports on motor imagery. Therefore during the motor experiences or movement related brain process, which wide range of networks is implicated, the multiple forms of imagery may be involved. Therefore the method used by Wayne McGregor, in May’s study, included scanning a block-design with three non-dance imagery reference tasks, and four dance-related experimental tasks. McGregor used the first task for dancer to familiarise herself with the basic procedure of imaginary process. Therefore the dancer was given about six different scenarios prior to the scanning session. The dancer was not told which scenario will be developed within the scanning session. The creative tasks of mental imagery in dancer’s cognitive perception were measured by fMRI (May, 2011). fMRI stands for functional magnetic resonance imaging and it is a technique which through the magnetic resonance imaging provides detailed images of the brain or other bodily structures**.** These data were then used in analysis to investigate the

neural circuitry implicated in choreographing movement tasks (May, 2011). The tasks were then “divided into two phases: first an imagery creation phase, followed by a movement creation phase” (May, 2011, p.420). The spatical-praxic were conducted first before the two runs of the emotional tasks. These helped to identify the two hypothetical aspects of choreographic thinking within creations of imagery and mental movement creation. The results of the experiment one indicated

> …that changing focus of the task from spatial-praxic to emotional representations changes the forms of imagery that dancers are aware of using in their movement creation These changes do not always correspond with what one might expect if the changes were just due to demand effects, which would lead to the dancers reports reflecting their expectations about the needs of the tasks, and as with any self-report data, objective cross-validation would be helpful (May, 2011, p.421).

For the purpose of the creative tasks this study uses a Feldenkrais Method, which embodied the psychical movement with mind and through cognitive sensory experiences. The Feldenkrais Method is an approach to human movement, learning and change. This somatic movement method was developed by Moshe Feldenkrais (1904–1984). His method is based on improving wellbeing, to connect health with mind and body. He suggested that if the individual is aware of the way how they move, they can learn and improve their health. The Feldenkrais Method tends towards being a form of self-education as opposed to a manipulative therapy. His approach was experimental, and consequently through his methods the body and mind engaged in a self discovery process and movement enquiry. Moshe Feldenkrais was born in Russia 1904, from Israeli origin. He trained as an engineer and atomic physicist. He studied in Paris, France shortly after 1940 he escaped to Britain. Apart of his excellent engineering skills he was a lover of sport mainly judo and soccer (WWW, Camellia Productions, 2012). Feldenkrais was always active man and often his ongoing knee injury would flair up. The doctors suggested an operation for which they predicted a fifty percent chance of complete recovery. Feldenkrais

decided to see if there was another solution rather than an operation. He studied the mechanics of human movement and re-taught himself how to walk and move without pain. Through his studies he has found that most humans use their body inefficiently and he discovered that this had a real effect on the individual's health and fitness. This inefficient use of the body included all behavior aspects such as bad breathing habits, poor co-ordination as well as joint and muscular movement problems. He used his experiences in engineering, physics, his background in martial arts and the new knowledge in physiology, neurology and psychology, in order to develop his practical method of Awareness Through Movement. This method is constructed by a number of exercises, which through restriction on the movement of one body part will make the dancer find different way of moving. Therefore the awareness on the particular movement re-connects with the dancer's kinetical experiences of cognitive perception. The structured exercises and tasks are designed to make the participant/dancer aware of their body movement no matter if it is small or large movement.

Experiences of embodiment within the exploration of interactivity through improvisation have focused in this research on the impact of technology as a conduit for this process. The software Isadora is used in this study as a research tool to identify and facilitate this process. Isadora is designed software to interact with the user, manipulate in a real-time digital media for the choreographic process. Isadora is used as a supportive research tool to test, to measure and to question the level of sensory perception and set parameters for the practical explorations. The main functions of Isadora include the editing and filtration of pre-recorded video, live video, sound and standard MIDI Musical Instrument Digital Interface files. According to the software's designer Mark Coniglio, the Isadora program allows the creator to be creative and to create every time something new (Coniglio, 2009).

A violin is an instrument that's been around a lot for around 500 years in its current form. It continues to be wonderful in its ability to express new ideas, because it's sensitive to human gesture. It gives surprise to the player – for example, when the instrument is cold, it responds differently. This combination of sensitivity, and being influenced by the environment, is something that hasn't happened yet [in technology] (WWW, Imperica, Coniglio, 2009, News 10 May 2011).

This creative process happens by linking together *actors* and *watchers* in the programme's control panel. Each of the 'actors' have specific functions within the programme and upon the media output. The actors are linked to a *watcher*, which allows the interactive process from the outside output such as MIDI messages, mouse and keyboard actions or video camera. Please refer to figure 6. The final element of this interactive process is to view its creation via the computer's video screens, speakers, or MIDI interfaces. The extra factor to view this can be on a big screen by linking the computer to a projector and project the visual output onto a wall or projection screen (Coniglio, 2009). Isadora use the computer's built in graphics card and allows different types of 3D effects, different shapes and colours. This is a very flexible technique to composite images on the screen (Coniglio, 2009). Isadora allows the media manipulation such as speeding up the tempo, re-winded the video as well as visual distortion of the visual images. The software allows the interaction of digital media in live performances (WWW, Niessen, 2011).

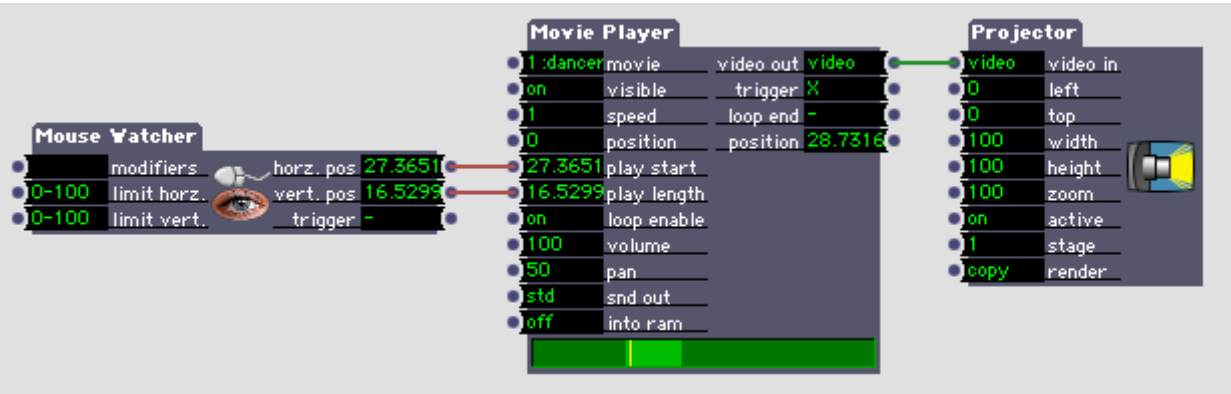


Figure 6. The Isadora Factors linked together (Coniglio, 2009, p.33).

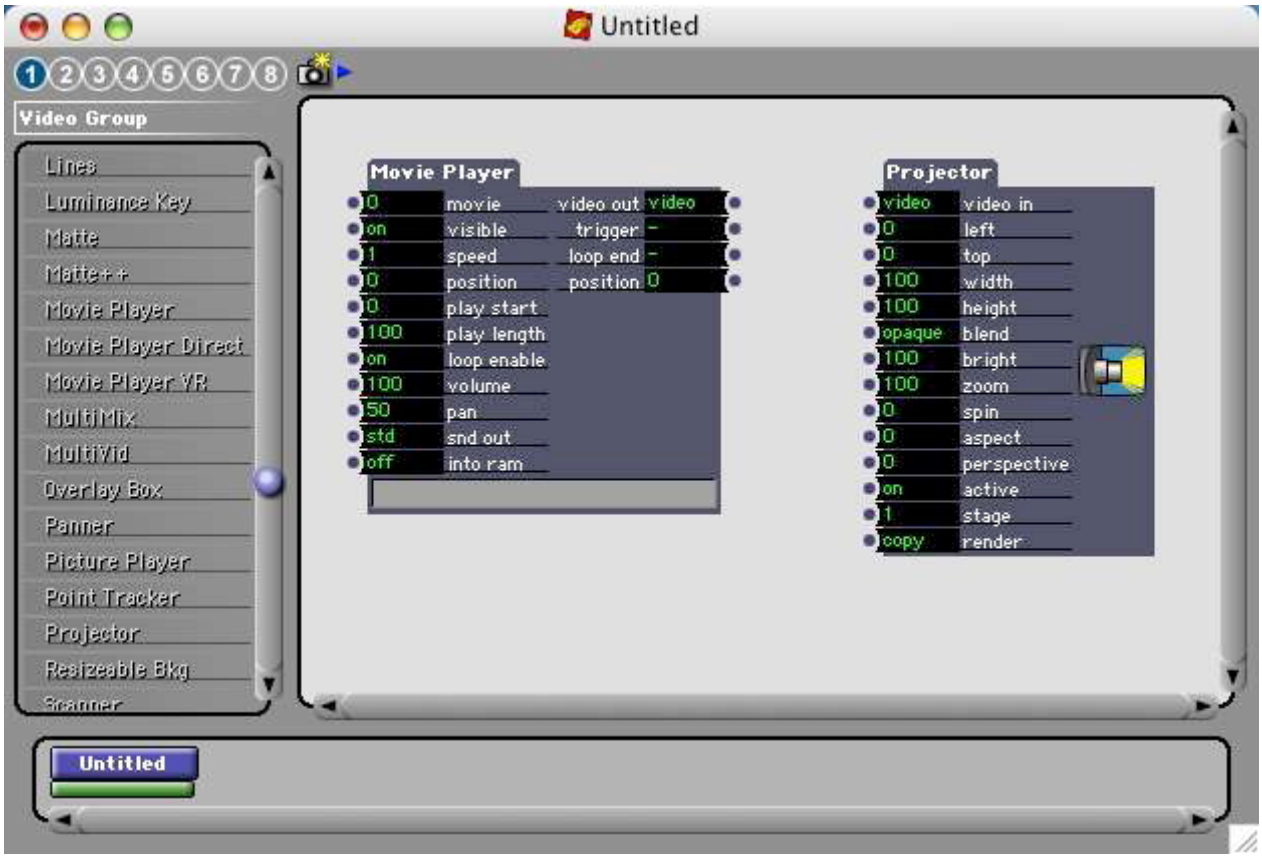


Figure 7. Scenes in Isadora, which the researcher can manipulate, build and develop (Coniglio, 2009, p.28).

The toolbox is divided into eight groups as shown in figure 8. such as video, audio, Midi, generator, mouse and keyboard, calculation and control group.

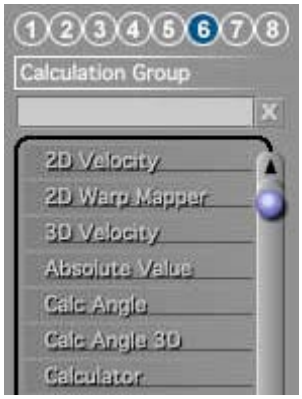


Figure 8. The Toolbox with eight groups (Coniglio, 2009, p.75).

The actor real time watcher, figure 9, is used for live interactive streaming. Therefore the video camera which is connected to the computer needs to be selected in the video output tab, in order to stream the live video. The actor 'video delay' can be used with the real time watcher when interconnected with the actor 'real time watcher' to the projector. The user can set the live video streaming, for example, two seconds of video delay.

Figure 9. Real Time Watcher (Coniglio, 2009, p.300).

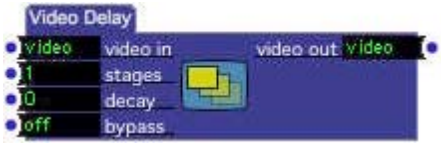


Figure 10.Video Delay (Coniglio, 2009, p.350).

To move from scene to scene the actor 'jump' (please refer to figure 11) with a combination of actor 'keyboard watcher' (figure 12) makes this move possible. The set parameter in keyboard watcher is, for example, letter L, and set parameter in jump is showing +1. Therefore when the user press on a keyboard letter L the scene will jump to the next scene.

Figure 11. Actor Jump (Coniglio, 2009, p.250).

Figure 12. Actor Keyboard watcher (Coniglio, 2009, p.251).

The actor 'colour maker' (figure 13) within Isadora programme is used to give the colour to the visual image projected onto the wall. This actor is used in one of the creative tasks in this study. The other actors mainly used in this study are 'shapes' (figure 14) and 'picture player' (figure 15), which are used in creative task 2 on the day one, with moving images in different shapes and sizes.

Figure 13. Colour make actor in Isadora (Coniglio, 2009, p.102).

Figure 14. Actor Shapes (Coniglio, 2009, p.317).

Figure 15. Actor Picture Player (Coniglio, 2009, p.292).

Models of perceptual process have been drawn from other fields of scientific inquiry and experimental investigations utilizing concepts and models from a range of disciplines (Gazzaniga, 2000). For example, George Seurat (1859-1891), a French Post-Impressionist painter, who devised the technique of painting known as pointillism. This technique uses colours, which were applied in small dots on a pallet. Painters traditionally mix colour pigments on the pallet before applying them onto the canvas. Primary colours were then mixed on the pallet. Seurat was influenced by Thomas Young (1773 –1829), an English polymath and Hermann Ludwig Ferdinand von Helmholtz (1821-1894), a German physician, who presented a theory of the relationship between painting and perception. Their trichromatic theory of colour vision presented the different photopigments in retina cones which has been adapted in the psychological and psychophysical studies. The link between the psychological description of colour and perception are at the heart of the problem of relating brain to cognition. These early studies show that there are three different types of cone receptors in the retina in the human eye, which is responsible for the colour vision. These studies then defined the references of each cone pigments such as S for Short as well as for Blue, M for Medium as well as for Green and L for Long as well as Red wavelength receptors. Each cone receptors have peak sensitiveness of light and

brightness from 420, 530 and 565 millimeters. The three different signals received from the three cone types allow the brain to perceive all possible colours. The dancer's colour perception is somewhere between the 420-530 millimeters of wavelength (Wade&Swanston, 2001). Subsequently the development of other theories such as theory of colours by mathematician and physicist Sir Isaac Newton (1642-1727), is supporting the vision when perceived light and its functions on retina. He was fascinated by the nature of light and his experiments in the 1660s demonstrated that "white light can be decomposed into mixture of wavelength and recombined to recover the white light" (Gazzaniga, 2000, p.17). Another supporting development of the theory of colours, by the German poet and novelist Johann Wolfgang von Goethe in 1806, which considers Newton's theory spectrum of light, and Goethe describes the phenomena of coloured shadows, refraction, and chromatic aberration. However his theory was not so much concerned with the analytic treatment of colour, which is seen in Newton's theory. Goethe comes to understand the phenomena of human colour perception. The science of colours is a study of perception of colour in human eye and brain, the origins of the colours and the colours theory in art as well as the physics of electromagnetic radiations in the visible range. This study is concern with the visual perception and therefore understanding how the dancer's eye perceives the colour of the moving visual image. Goethe's occupations with paintings influenced the works of Wasily Kandinsky, which is used within this research. Later on Karl Ewald Konstantin Hering (1834 – 1918), a German physiologist, proposed a theory based on a system of colour opponents such as yellow versus blue, red versus green and black versus white. This is a development of the trichromatic colour perception and therefore when the dancer perceives the visual image she/he can response to it. Each is applied in different parts of the vertal and dorsal stream of the brain. The vertal stream perceives the colour, which goes through the visual cortex V1 into V2 and V4, please refer to the figure 1 in chapter one. On the other hand the dorsal stream is guidance of actions and recognition of objects in relation to the space in visual cortext V1. The research of visual perception is far more complex and consequently the developments of understanding how the brain works is still being studied (Gazzaniga, 2000). The visual illusion is concerned with the human perception and conscious awareness. It is a potential tool for studying the relationship

between the perception and action integrated with the nervous system. Illusion tries to determinate the difference between the visual perception and reality (Khan, 2010). The stimulus configurations influence the individual's conscious perceptual experience without altering the physical characteristics of the objects being perceived. Therefore when the dancer changes the physical characteristics of the moving visual image it alters the perception and action upon the conscious experiences. For example the dancer is asked to observe the moving visual image in one of the creative tasks. However the image is moving and therefore when the dancer looks away and looks back the image is not physically there. The dancer changes its physical characteristics and therefore creates the visual illusion of what is seen before and after. After that the dancer's perceptual judgment of the visual image was effected by the illusion and therefore reselect the action of abstract movement (Khan, 2010). Abstraction of movement is process of cognitive craft and relevant technique applied within the hypothesis of attention (Blom with Chaplin, 1982).

This study uses a method of abstraction of the moving visual image. The idea of abstraction was influenced, in this research, by a Russian painter and art theorist works of Wassily Wassilyevich Kandinsky (1866 – 1944). His paintings are abstract and very colourful. He was always interested in colour symbolism and psychology. His earlier work was influenced by locations he went to visit, such as the Munich-Shwabing churches (Düchting, 2000). In his later work he tried to combine painting with composing music. He was always a believer that music was like a paintbrush and the keyboard like the different colours in the painting. He was influenced by another painter of his time, Claude Monet, and his painting call *Haystacks* (1890-91) and composer Richard Wagner's piece *Lohengrin* (1848*)*. He felt that both artists had pushed the boundaries of traditional composing and painting beyond standard lyricism. His paintings were also influenced by the theosophical theory, which is creative aspect of a geometrical progression beginning with a single point such as descending series of circles, triangles and squares (Düchting, 2000). Kandinsky continued in the twentieth century the colourful paintings of landscapes using broad swaths of colour and recognizable forms. The reason why his painting called *The Blue Rider* (1903) (fig.16) was famous, is that viewers could have engaged within its

creation, as the shadow in front of the figure on the horse shadows perhaps another figure, a small child, or perhaps not. This intentional disjunction became consciously a technique for Kandinsky (Düchting, 2000).

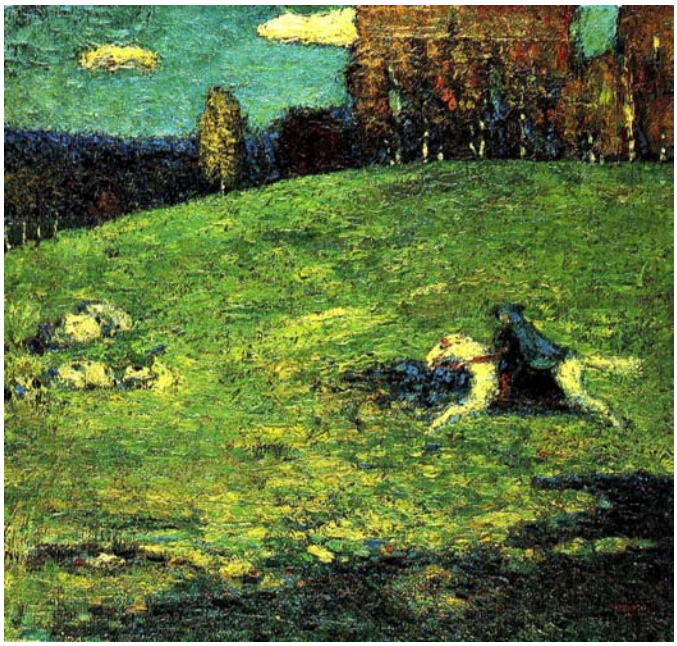


Figure 16. Wassily Kandinsky, Der Blaue Reiter 1903 (Friedel with Hoberg, 2008, p. 54).

The practical exploration component of this research is concerned with the interactivity between the choreographer, dancers and performers. This interactivity is employed through the use of technology and creative tasks in which the dancer engages. This is in order to explore the sensory perception within the live and virtual environments. The primary process of this study is the interaction of the live dancing body and the virtual projected visual image. Through the visual sensory perception of the dancer, the common ground for creating is found when thinking-in-work process. The moving visual image's have primary position within the virtual environment, which explores, creates and finds new ways of moving within the dancers body. This perceived consciousness experience a shared experience between the moving physical body and representational moving visual image. Therefore the practical explorations become a multimedia interaction within the space of

performance where the creative process has taken place. The approach of exchange and interaction requires that the dancer chooses and must take the responsibility for responding and the creation of new movement. The input from the dancer is restricted because this choreographic process of the moving body and the choreographer happens in individualist environment. The dancer is asked to engage in the creative process right from the beginning from the warm up when using Feldenkrais exercise method, through engaging with static visual image up to the moment of interaction with moving visual image. Therefore the primary aim is that the dancer gets involved in the process of this research so their creativity will impact upon the research question and findings (Popat, 2009). During the practical explorations the dancer uses improvisation dance technique. This technique allows the dancer to be creative. The improvisation techniques utilised are very flexible and can progress rapidly and at the same time devolve in a complete different direction (Blom with Chaplin, 1982). The dancer's technical skill and understanding were important for this movement exploration such as the dancer's strength, weakness and coordination responses to the interactive dialogue between the dance and the technology, which happened in a direct way (Carter, 1998). The warms ups and exercises prior the practical explorations were important too, because the dancer used them to tune in with her inner-self. It prepared the dancers kinetic functions of muscles for the improvisatory tasks. This research found the Feldenkrais Method very useful during the practical explorations when the dancer was introduced to the practical self discovering exercises before the she engaged with the creative tasks. This is purely to make the dancer ready for the creative task to work with the visual images provided and have the knowledge and understanding of what is asked of the dancer to do, when perceiving the visual image. For example the dancer lay down calmly on the floor with knees bend. She was asked to press into the floor with her heal, toe and small toe. This kinetically action required concentration in one part of the body. As observed the dancer moved with her knees during this pressing action. She was then asked to minimise the action so that her knees were not moving while pressing with her heal, toe and small toe into to the floor. This required of the dancer to discover new way of how to do this, to listen to her body, feel how her foot and toes moves, and acknowledge what muscles are engaging in this minimised action. Feldenkrais *Awareness*

through movement describes this as engaging with structured movement explorations that involve thinking, sensing and moving as well as imagining. As Feldenkrais said "…that changes in the physical experience could be described as changes in our internal self image, which can be conceived as the mapping of the motor cortex to the body" (WWW, Hollystic Hadeaway, 2012). The connection with inner-self, knowing and understanding of the physical aspects of embodied movement is enormously useful for the practical research exploration undertaken in this study. The entire body as a coherent and integrated set of body parts and subjective experience moves as an holistic entity in space and time. Although body parts cannot be separated from the rest of the body, it is possible to enhance the tiny movement by focusing on one part of the body. Therefore the rest of the body is used as a background for that moving part and the unique capability and limitations becomes more apparent (Dodds, 2001). The structure of the practical task, which is explored in next chapter, is there to set the framework of experimental work that will encourage the freedom for exploration. The dancer is encouraged to adopt the individual style in a creative way. The dancer aims to achieve a form of creating and generating new movement as well as to develop the dancer's creative potential using media, in this case Isadora software. This experimental process should encourage the dancer to discover more about their moving embodied experience (Hawkins, 1991). The initial methodological parameters of each practical task were challenged in order to test the veracity of the individual practical task in context of this research. Drawing on the sampling method of May's Points of Mental space research, the dancer was asked to provide a verbal commentary on the improvisatory decision making to pin point the place where the interaction and responses to the visual stimulus were happening in order to create and generate new movement.

The research tool, Isadora software, was used in this study. The program gave the researcher the possibility of building simple or complex scenes, which then the dancer would explore through the improvisation and interaction of the given task. The understanding of how to use Isadora is important in this research. Firstly the software can operate with visual images, which are pre-recorded and secondly it can be used for live

media interactive explorations. The aim was to show that both the role of technology and the embodied dancing subject are playing an equal part in creating new ways of moving through and articulating the space (Dixon, 2007). The use and manipulation of live video material within the Isadora software were used to structure the practical tasks this research. This computer system can operate a complex set of tasks such as layering of manipulated images over videos. Isadora can be also used in complex ways to manipulate live and virtual mediations of the dancing embodied subject and of its phenomena. The easiness of the first creative task, which uses two layered static visual images, the dancer reflected and responded with settled approach. However as the day unfolded the explorative tasks were more complex and the intensity of the dancers responses to the moving visual image were immediate and the results supported the analysis and findings for this study. This is further explained in the next chapter. The dancer acknowledged the individuality of each creative task and became more aware of the structure and strategies, which this practical exploration was using. Isadora can provide the visualisation of images; objects, colours and shapes (please refer to figures 13, 14 and 15). The static visual image of Kandinsky's work of art, Squares with Concentric Circles (1913) and Abstract Art Artist painting, was the starting point for this first explorative task. Kandinsky's approach of abstraction and use of colours as well as geometrical elements influenced some parts of this exploration. For the purpose of this research, working with visual perception, the selection of the visual stimulus had to be carefully considered. It was necessary to utilize an abstract image that allowed the dancer to engage in an associative capacity with the stimulus represented by Isadora program and introduced to the dancers for the exploration. The Isadora software offers a variety of methods for motional abstraction and therefore the Kandinsky paintings provided a clear, abstract visual image as starting point for the dancer to respond to. The connection of his theory with Isadora was perhaps the key motivation for the dancer to connect, interact, and respond and to create movement. The variation of *actors*, built and linked together (please refer to figure 26 p.83) within the software enabled to create abstract, colourful visual presentation with complexity or without it very quickly within just a simple click of the researcher and the dancer had to adjust to it and manifest the change in a physical movement.

The use of technology was not limited just by the Isadora program. It was actually a very complex setting, which included the laptop with installed Isadora software, the mouse, video camera connected to the laptop, to stream the real live movement; the projector machine connected with the laptop, to project the visual aspect of the Isadora software. The use of other three video cameras spread around the space to record the live exploration from different angles. The theatre lights were pointed at the dancer and the dance space either dimmed or brightened to enhance the projection quality. The photographs were taken during the exploration for documentation purposes. The dancer had to perceive the environment around her such as objects, cameras, lights, the projection, the visual images, through the senses. The dancer had to connect with this complex setting and engaged with the researcher and technician in the space. Therefore the dancer was challenged to the point where the she became less aware of what was happening beyond the immediate parameters of the task. When the dancer connected with the technology and the environment the dancer responded to the task very well and the results were satisfying. The equipment had to be set prior the dance working in the space and during the explorations I explained what and why each technical element played a role in this exploration. For example the camera on the right was taking the close ups shoots, and the camera on the left at the front of the projection was for the sound purpose and close up on the face of the dancer.

The dancers costume was important for the practical explorations in this study. The optical vision of the moving visual image was the initial point for the movement improvisation. The dancer tried out different coloured t-shirts in order to establish, which one worked most effectively when the moving visual image was projected onto the wall. It was important for the dancer that the aesthetics of moving visual image was interesting and clear enough for the dancer to interact with. The dancer explains that seeing the yellow lines as the representation of her body, made her wanting to create different shapes and challenge her explorative approach. The dancer was improvising and the video cameras were capturing the movement generated by the dancer and manipulating it in real-time. Through this manipulation the dancer's body was distorted and disembodied from her physical body.

Analysis and Evaluation

This chapter focuses on the practical explorations, which have formed a central component of this research project. Analysis and evaluation processes have enabled an understanding of how the visual imagery is perceived through the senses, on what level of embodiment the dancer engages with the visual image and technology; and when the live and virtual environments became apparent for the dancer to embody and interact through sensory perception. This chapter considers the analysis of the creative practical research tasks undertaken. It also outlines the technical setting, for example the use of video cameras and other equipment used in this practical research. It describes the Isadora software and its technical elements. It maps the creative process and highlights the results of the practical experimentations as a key finding of this research. The practical exploration was undertaken within a theatre space, which was equipped with theatre lighting, Isadora software, three digital video cameras and a projector to generate the visual imagery onto the large back wall within the performance space, please refer to figure 17.

Figure 17. University of Bedfordshire Theatre, Bedford UK and the technical set up within the space, with dancers and the researcher.

The practical explorations were undertaken in a creative approach for the purpose of this research. The space in which these tasks were undertaken was the theatre space in University of Bedfordshire. The relevant technical set up within the space enable the flow of interactivity between the dancer and the static or moving visual image as well as to record the progress of this process. The cameras were placed around the space. One of the cameras had an important function to capture the dancer's movement in live streaming, which then was projected onto the large back wall of the theatre. This was possible by linking the camera to the laptop and using Isadora software. The research set the scenes in Isadora in order to explore relevant philosophical arguments for this research. The dancer then was given five creative tasks to interact with static or moving visual images. Each task was structured such as set of spatial parameters were given to the dancer, in which the dancer had to move in, or it was visual parameters of the dancer's visual perception. The dancer used improvisation technique as a base for the explorative task. Therefore the improvisation technique gave the dancer sense of independence to create a moment while interacting with the moving visual image.

The dialogue between theory and practice is a central component within this study. Professor Sarah Rubidge discusses the 'work-in-progress' and 'thinking-in-work', in her PhD Embodying Theory (1998), which are aspects of embodiment emerging through the philosophical problematical embodiment into practice. She says:

> I demonstrate that, during the course of my research, not only did my dance 'thinking', that is the thinking that takes place in and through my choreographic practice, undergo radical change (for example, the kind of work I was making changed radically during the research process) but also that the changes in my practice demanded that I make a substantial epistemological shift in my philosophical thinking (Rubidge, 1998, p.1).

However Rubidge's theory is explores the private work-in-progress domain of the creative process before it is released into the public domain of the performance product, which is

formulated as an ever changing network of relationships between performers and spectators. Based on Rubidge's study, therefore any decision made by the artist is presented by the researcher as well as the dance in this study. The practical explorations are seen in this study as an ongoing network of possibilities, generating new compositional structures, and providing developmental opportunities for the dancers involved. Through continuous dialogue between the work and the artist, the artist, in this case the dancer perceives possible movement and creative pathways, which develops the structure and makes artistic decisions in relation to the work. Rubidge presents this process as work-in-progress, in which the dancer applies the appropriate decisions in the context of the research question (Rubidge, 1998). This is very significant to this study as the dancer experienced, perceived and acts on the visual imagery, and as a result of thinking and action the visual image becomes defined and restructured into a movement concept. Therefore the dancer made conscious or intuitive decisions in following one pathway rather than another one. Therefore the explorative task has a new direction at variance with the original intention of the given task by the researcher. Rubidge says that "This process sees the artist engaging in a continuous interplay between the poietic and esthesic processes, between action and analysis when making a work" (Rubidge, 1998, p.3).

The first experimental movement task that the dancer explored was a static visual image (please refer to figure 18). The projected image was static, colourful and abstract and projected on the large amount of wall within the performance space. The abstract imagery is a representation of the visual world. Abstraction uses a visual language formed by colours and lines to create composition. In this study the specific example of abstract visual art Wassily Kandinsky, which articulates a geometrical abstraction, it uses geometrical objects; circles and squares created in a non-illusionistic space and non-representational composition. The dancer was given ten minutes to perceive the projected visual image and react to it with improvised movement. There were no other set parameters. The logical analysis of this task was to observe the dancer's improvised movement, decision-making and to get know the dancers technical and creative response to the task.

Figure 18. Wassily Kandinsky Squares with Concentric Circles (1913) and Abstract Art Artist painting (WWW, Yessy, 2012).

The second given task, again on day one and two, was an image of Abstract Art Artists figure 19. This layered visual stimuli had three degrees of layering. The first layer shows a close up of the image figure 19.a, the second layer was the same image overlaid in different angles as shown in figure 19.b and the last layer shows an extreme close up of the image seen in figure 19.c. The layered static visual images were faded into one another in two minutes intervals. The dancer did not know that prior to the task that the image would be changing at regular intervals. These three different but yet similar phrases were changing over by the *actor* 'keyboard watcher' in Isadora when the researcher pressed a button on a keyboard. This was done intentionally to analyse the reflex of the dancer's visual perception. On the day one when the image with layer one changes to layer two, the

dancer did not acknowledge the layering. The dancer's movement continued to be fluid and non-changeable. When the dancer perceived the image for a while the dancer's physical movement changed such large movements with arms pathways and fast tempo, more curved shapes in the bodily movements, travel from foreground to background and side to side and the dancer became more aware of the shapes of the projected static image.

The dancer commented after the exercise, that the layered image two looked exciting and with strong colours, which she responded to with curvy shapes. Therefore the dancer was inspired by the visual image. However when the third layered image was shown, please refer to figure 19.c, the dancer's movement became slow, small and the dancer explored floor pattern materials with small arm and leg movements. Please refer to the appendix DVD video footage 2.

Figure 19.b. Dancer in creative task two, day one.

Figure19. Abstract Art Artists

Figure 19.a. Static Visual Image - first layer.

Figure 19.c. Dancer in the task two – static visual image - third layer.

These two tasks were explored by the dancer on day one and day two. Upon on analytical comparison of these two tasks, it is evident that the dancer's movement vocabulary has developed. The dancer had no experience of exploring with interactive image in Isadora programme on day one and on the day two the dancer had already gone through the creative explorations. The comparison of the two short pieces are documented in the video footage, please refer to appendix DVD video footage 1 and 2. The dancer commented that during the task one, on the first day, she was concentrating on the circular shapes and on the second day her movements were influenced by the lines and squares apparent in the visual stimulus. The dancer's conscious decisions varied on each day dependent on her visual perception of the stimulus and therefore the choice of movement varied too. The concept of Ponty's theory of attention within the sensory perception refers to the level of consciousness. Therefore when the stimulus is on one occasion too rich and on second occasion is too poor for any phenomenon of perceived image to appear notably to the dancer's consciousness. Therefore the dancer's 'thinking-in-work', as summarized Rubidge in her Embodying theory, lacks of the contingency within the occasions of the thought process. The perceptual consciousness and intentions' of 'thinking-in-work' have common ground and that idea of attention creates nothing, because the world itself is full of impressions as well as the determination of thoughts are equally independent of the action of mind (Ponty, 1945). The dancer's movement shows development in the movement vocabulary on the day two. The movements were more explorative in relation to the projected static visual image. Therefore the dancer used slow and fast tempo with a precise distinguished characteristic of the dynamic. The spatial pathways of movement

were using more of the foreground, therefore the dancer moved closer to the visual image. These developments materialised after working with Isadora software on the previous day.

The task two with the layering of static visual images were undertaken on day one and day two. On day one, the dancer did not recognize the changes within the layering of the image while moving and responding to the image. On the day one of the process the dancer's movements were slow when shown the first layer, please refer to figure 19.a. The dancer used curves pathways and shapes as well as movement that travelled faster when layered image two was shown (please refer to figure 19.b) and slow, lower ground and small arm and feet movements were exploring the layered image three, figure 19.c. However analyzing the video footage, the dancer shows development in the movement aesthetic. The dancer's physical movement became very dynamic, explorative of the gravity such as facing upside down, using different body parts, such as arms, head, feet and hip. The dancer seemed to lead the movement initiation mainly through the hip and the arm. The dancer's challenges the gravity response in order to respond to the shape of the visual image, please refer to the appendix DVD video footage 1. The dancer later on commented that this time the circular shapes of the projected layered static image seemed more powerful and it guided her through the physical responses of the perceived image. "The visual clue that triggered my response was the circles, instantly I thought of more curved movements" (Dancer, 2012).

What became clear to the dancer was how these primary factors of visual perception when perceiving objects such as shapes, played an important role in how she perceived the projected static visual image in the given time and space. Merleau-Ponty suggests that there is particular liberation of creation within attention of perceiving colours (Ponty, 1945). The infant can distinguish only the coloured from the colourless during the first nine months of life. After that the development of coloured areas can be distinguished from 'warm' into 'cold' shades and finally the detailed colours are arrived at the attention of the perceived object. However some psychologists argued that the pre-linguistic stage prevents the child from recognising the difference between each colour as they do not have a linguistic sign

attached. For example Merleau-Ponty suggests that when a child perceives a colour it must see the green, when the object is known as green. Otherwise the child would fail to pay attention and capture the colour's phenomena within the world in which it is perceived; and already established what colour it has. On the other hand this prejudice, of must pay attention, allows the world to be perceived as a secondary factor of attention, based on the physiognomic distinctions between shades, 'warm' and 'cold', 'coloured' and 'non-coloured' (Ponty, 1945). This is significant for this study, as the practical and analytical evaluations show that primary factors shapes of the visual image and the secondary factors shades of the visual image were supporting creation of a physical movement. Therefore the first perception of colours is a change of the structure of consciousness as well as the new establishment of new dimensions of experience (Monty, 1945). Please refer to appendix DVD video footage 2. As shown in figure 19 and 19.a, the visual images used in those two tasks became part of the new experiences through its phenomena of in colours, shapes and sizes. In the same time the images were projected on large wall space within the theatre, which gave a clear sense of epic scale to the image and the dancer's relationship to it.

The third creative task introduces the moving image into the improvisation exploration. This task was set up using one video camera, which streams video in the real time through Isadora, and then projected onto the large wall in the performance space. The live video was streaming the images in real time to enable a real time interactive exploration. There were two further video cameras set up in the space to document the practical exploration. The live stream video was placed in the middle of the large performance space, facing forward. Therefore when the dancer stayed within the frame of the video camera, it projected the dancer's movement onto the wall of the performance space; please refer to figure 17. at the beginning of this chapter. Figure 20 shows the set up scene in Isadora which was established for this exploration by the researcher. The projected motional visual image was set to represent the dancer's physical body in an abstract way. This first one it was vertical and horizontal lines. However if the dancer stayed still or in the frame long enough the images projected were similar to the real body image. See figure 21 and 22.

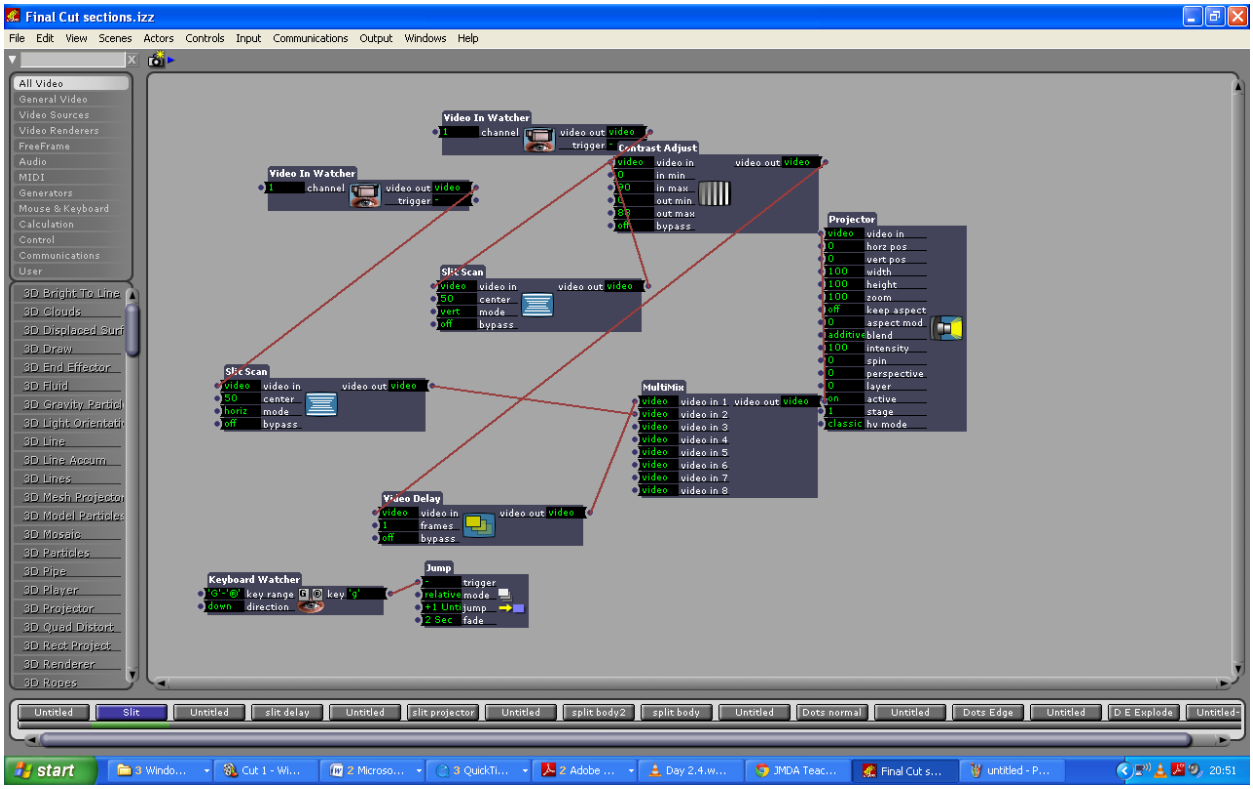


Figure 20. The actors set in the Isadora scene: Slit vertically and horizontally.

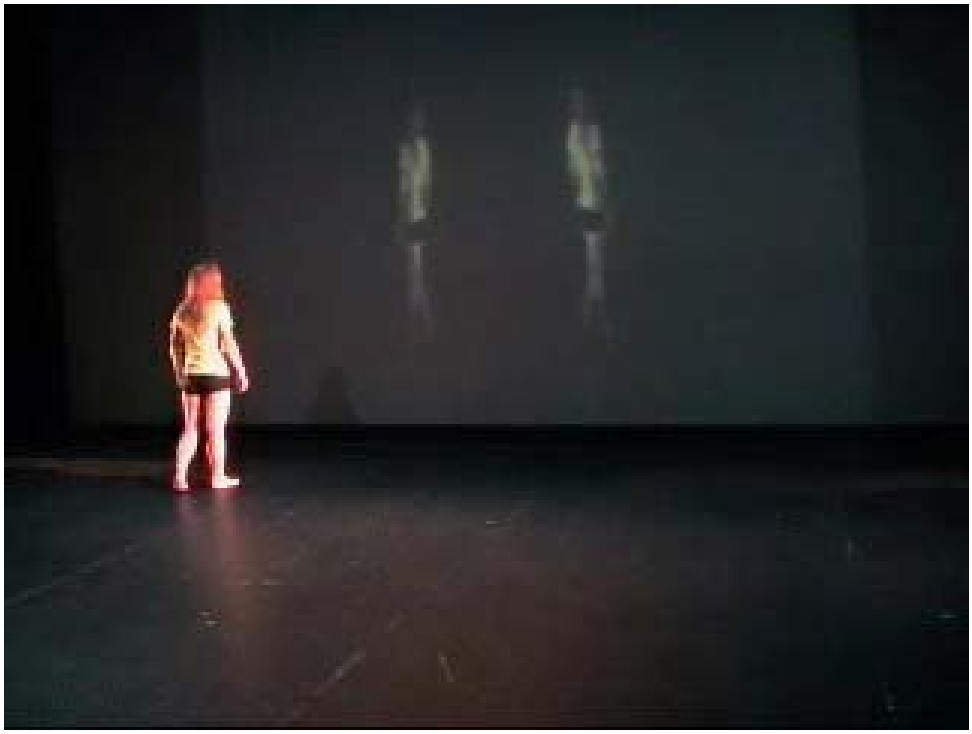


Figure 21. Dancer in task three

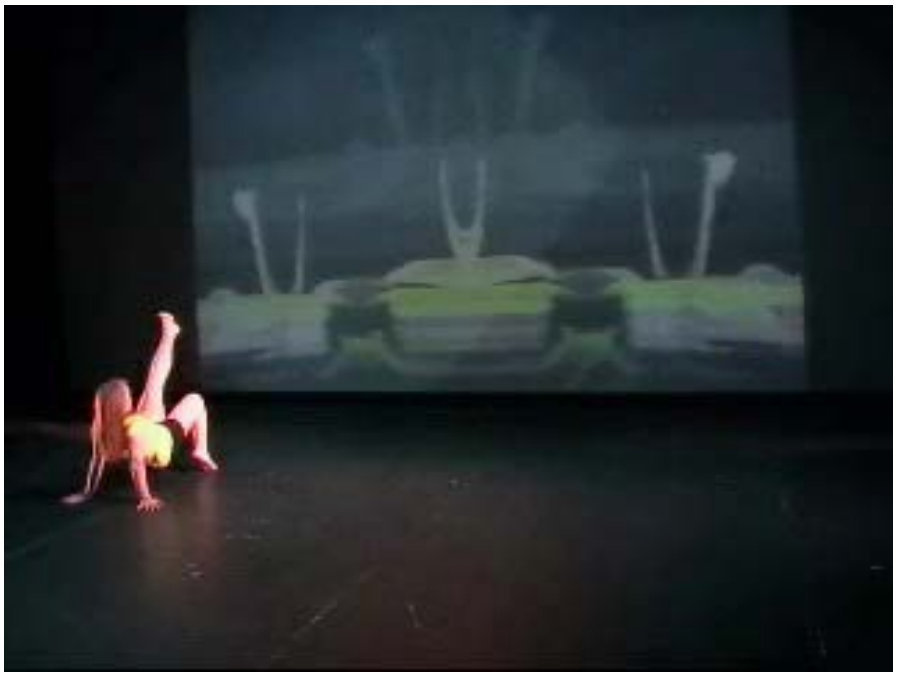


Figure 22. Dancer task three exploring the gravity, floor work and initiating movement with a leg and foot.

Figure 23. Dancer task three exploring the visual image on a diagonal special pathway

Referring to the above image (figure 23.), the dancer explored pedestrian movements, walking side to side, diagonally forward and diagonally backwards, and observed the multiple images of herself. Bergson's concept of multiplicity has three components of intensity, duration and voluntary determination. This concept is found to be particularly significant in this practical exploration where the qualitative multiplicity is situated in space. The dancer used the pedestrian movement across the space. This action triggers the intensity of movement in time and space; and through the interaction between the dancer and the moving visual image forms a qualitative visual image. This image is left behind by its creator, dancer. This is created by the compromises of the pure quality, the consciousness of the dancer, and pure quantity, which is space. Therefore the increasing and decreasing speed of the dancer's movement either makes the visual image increase or decrease in its multiple images. The multiplicity of the images, which she has developed from the perceived senses, set of line and order, which creates the qualitative multiplicity (Bergson, 1910).

These tasks three and four started to push the boundaries of the dancer's physicality and mentality in a different way. The dancer first had to work out what is actually happening in terms of the interactive parameters of the visual image. When she moved, she predominantly made use of the background and foreground space, using different body parts to initiate and lead the movement. The analytical approach was undertaken by the dancer through her sensory perception. The perceived experience of the image and its aesthetic such as what shape, size and colour the image has. Also how the projected image moves, in which direction and what pathways this image creates or what the predictable parameters of this are set task, was influencing the dancers decision making on how to move. Also when the dancer is too close to the visual image it becomes distorted to the visual senses, and therefore the dancer responding to the image which is to the left (if dancer on right) as that is much clearer to see and respond. The dancer says:

I was concentrating mainly on my legs and talking so my body got lost in movement. The visual clue was the colour of my top for me. The yellow works well. I was trying to see what shapes in my body created the same shapes on screen I discovered that it is hard to create the same shape twice whilst doing the same movement. The image is different every time. It made me again feel creative, the delay ame me want to see how much I could play with it and see how many things can overlap (Dancer, 2012). (Please refer to the figure 24.a and 24.b.).

Figure 24.a. Dancer in task three

Figure 24.b. Dancer in the task three

This was interesting to observe, because the dancer was engaging with a lot of factors in the environment and had to respond within the time limit of fifteen minutes for the improvisation task. Observation is a key tool for the analysis. Alma Hawkins, an American dancer and a leader in modern dance, believes that observation sets the awareness of the detail or the aesthetic qualities of what is observed (Hawkins, 1991). During her research she gave tasks to students to observe, then to share what they have observed. She further discussed the observation experiences:

> The ongoing observations and discussions revealed that students were sense-experiencing specific encounters – with increase sensitivity and greater awareness. This new awareness of sensory data enriched their creative work. Increased ability to see beneath the surface and to become aware of specified elements, relationships, underlying qualities of an object or event helped them in working imaginatively from their own motivation (Hawkins, 1991, p.26).

Jon May et al in their essay Points in Mental Space: An Interdisciplinary Study of Imagery in Movement Creation (2011) use the dancers of Wayne McGregor's Random Dance Company. The dancer focuses on an attention of the specific aspects of a mental image as well as the images provided in the context of a problem solving task (May et al, 2011). May's research uses the mental image with a meaning that it is something imaginary not physically present. The dancer uses imaginary during the improvisatory tasks such as "imagine an object", upon that imaginary process reduce it to the line and then visualise an element of it and finally make the dancer to describe what is visible (May et al, 2011).

> He asks his dancers to create movement in response to task instructions that require a great deal of mental imagery and decision making, and then observes the dancers' resulting movement, selecting and amplifying sections for potential re-use (May et al, 2011, p. 406).

In contrast to the May's research, this study is concerned with a real visual imagery through sensory perception. However the similar task instructions were relevant in the third and fourth task undertaken within this research process where the improvisatory task given to the dancer was to respond to the stimulus. The evolving responses to the moving visual image then set the new directions. Therefore the frameworks of the following tasks are developed upon the observation and decision making of the dancer (May, 2011). At this point the dancer was asked to comment on her movement actions and decision-making within the improvisatory context. This sampling method was explored by Wayne McGregor, during the Points in mental spaces research study. The dancer was interrupted during her individual sensory experiences. The subjective reports about her current subjective state was the result of questioning immediate self-report of her inner subjective experiences (May, 2009). This approach helped the researcher to measure the dancer's momentary thoughts as well as feelings. The action- tendencies of the responses were sometimes not as accrued and did not correspond to the movement. The responses were with a delay. For example, when the dancer said that she was concentrating on the image on the left, when standing in the foreground of the dance space, this statement was communicated when

she was already moving within the middle ground of the dance space and responding to the shape of the visual image. Consequently the dancer admitted that when performing this task there were a lot of things she had to concentrate on such as moving, making-decision and responding to the visual stimulus. Also commenting on her movement responses, indicating why she was moving in a particular way and what made her visually aware to move differently. The data were collected and the decision making recorded. Alma Hawkins comments that being more perceptive enables the practitioner to see details, relationships and form, which not only enriches human life generally but also stimulates creative responses. It also serves particular role in responding to the creative work of others and help to measure the results of the individual creative practice (Hawkins, 1991). Therefore after careful evaluation of this and other relevant tasks, the shapes were the centre of the dancer's interest to create specific responses. Subsequently the colour of the projected visual image drives the creation of new shapes. The colour of the costume for the dancer was yellow. The dancer tried different type of colours such as pink, green (please refer to the appendix video footage 1 and 2). However the yellow lines of the projected moving visual image were the brightest on the projected wall when interacting with the image. The researcher also made a decision to uncover dancer's arms and legs, which enhanced the projected image in its visual aesthetics. Therefore when the dancer stood still her physical body was projected as a strong and clear image. Please refer to the figure 21.a.

Each structured task with set parameters brought a new way of approaching the dancer's movement. a given space parameter. The spatial design is mainly anticipated through the dancer's movement creating lines, curves and circular moves, stillness or moving, and sense of ongoing which is given in relation of the timing within the space. The space becomes active when the dancer interacts and moves within the space and undertakes the symbolic meaning of the space, please refer to the appendix video footage 3 (Bloom & Chaplin, 1982). The specific spatial parameters were given to the dancer to move within the geometry of the space. A space has arrangements of direction, dimension and planes, points and lines. The directions such as forward, backwards, sidewise or diagonal as well as gravity, elevations are part of the spatial analysis. The dimensions within three-

dimensional space can be identified by high, width and depth. Planes are created by mixing the three-dimensional and vertical, horizontal and sagittal dimensions (Bloom & Chaplin, 1982). For example in the first two tasks the dancer could use any directions and dimensions, however still remain in the visual parameters of the dance space. The dancer moved side to side, used more of the middle ground and foreground, moved in low level, and stayed within the visual image parameters, please refer to video footage 1. The third and fourth tasks were constraining the dancer to stay within the visual parameters of the video live streaming camera. Therefore the dancer used smaller and confined space. If the dancer moved further than the visual limits of the frame of the camera shot, the camera could not capture the dancer's movement and therefore it would project only a plain black background with no imagery. The results were that the dancer moved mainly in middle ground and background of the dance space, however using the vertical and diagonal pathways as well as left and right of the dance space. After that the researcher set new parameter as part of the fourth task where the dancer could only move in a horizontal line from background to foreground of the performance space. This had an effect on the dancer's movement which travelled. Therefore the tempo of the dancer's movement went from medium to fast. The movement was initiated by the dancer's legs when at background of the space and by the dancers arms when at the foreground of the space, please refer to the appendix DVD video footage 4. Subsequently these spatial parameters had an effect on the visual image being projected on the wall. When the dancer used the foreground the image appeared on the wall on the top of the projected screen and in small version, when the dancer used middle ground the imagery was projected in the middle of the screen and it was larger in size than the size of the dancer, please refer to the appendix DVD video footage 4. When the dancer used the forefront of the space, further back from the image, the image appeared large, clearer and was comfortable for the dancer to react to it. This gave the dancer more to see and to work with. Therefore the physical movements were rather frantic, using the whole body and using different levels. On the other hand when the dancer was too close to the large image, she could only see a small part of the image. The distorted image had an effect of making movement using most of the time the top part of the body.

Based on the evidence the visual stimulus is important for the dancer to be creative and to generate new ways to move. However it all depends on how the individual perceives and interprets the image. The dancer draw on ‘the thinking- in-work’ method defined in embodying theory by Sarah Rubidge’s (Rubidge, 1998, p.2). This method refers to a thinking process where the artist, in this case the dancer, can be art specific such as the way how the materials of the art form has underlying assumptions, philosophical frameworks and, behaviours as part of the research process. The ‘thinking’ is a rational thinking process aligned to the practice of ‘knowing’. Therefore the dancer and the researcher observes the configurations and in response to that act and move accordingly such as spatially, a stillness and orientation (Rubidge, 1998). The dancer’s actions and recognition to manifest physical movement depended on the visual aspects of the moving visual image. It was necessary for the dancer to know where the screen of interaction starts and where it ends. Also the spatial awareness of how far the dancer is from the visual image and what are the definite distinctive markings of the visual image were important factors in this research. The dancer learned to associate with the object through the explorative process and applied the knowledge base accordingly to the moving visual stimuli (Gazzaniga, 2000).

Figure 25.a Dancer Task Four – arm extension movement and distorted arm visual image.

Figure: 25.b Dancer Task Four

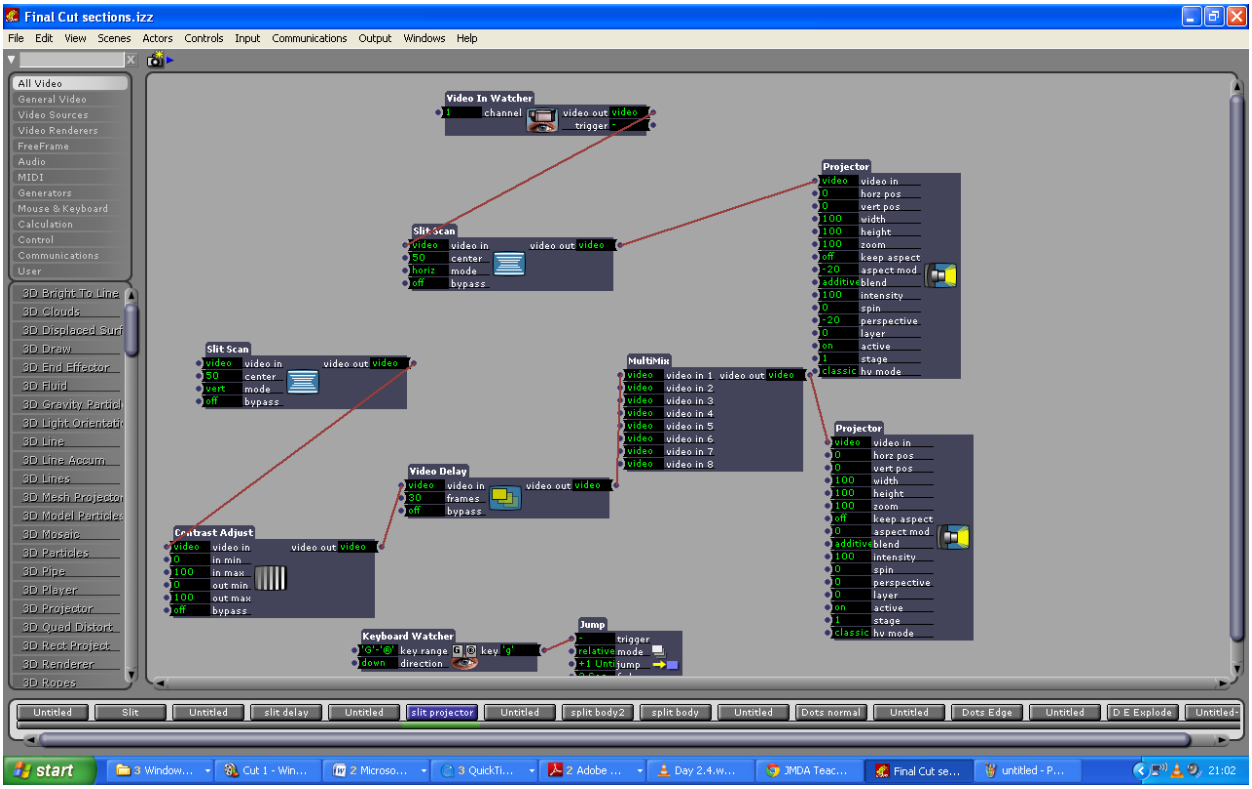


Figure 26. Actors in Isadora scene – slit actor, delay actor vertical 30frames, the projector aspect mode -20, perceptive -20 (Coniglio, 2009, p.297).

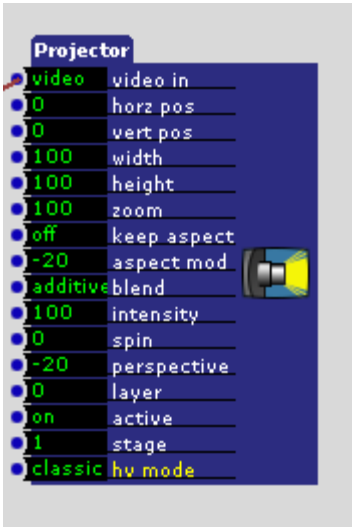


Figure 27. Projector actor with the close up of set values and the sample how the image is shaped (Coniglio, 2009, p. 297).

The warm up technique of Feldenkrais Method of Awareness through movement was used to warm up the dancer's body. The warm up was designed to trigger certain thinking processes for the dancer, moving through the space and get the dancer ready for the forthcoming creative task to explore the perceived experience of their body with the live and virtual environment and to generate new movement through sensory perception. The awareness through movement technique is a Feldenkrais technique to engage with our body and mind and to discover new way how to move through several of exercises. This technique was new to the dancer. This method encouraged the dancer to experience the warm up in a new mode such as working in a slow pace. It also suggested to the dancer to think in a new way, for example that longer concentration on one part of the body can maintain connection between the brain and her body. Awareness through movement technique also connected the dancer with her nervous system. The warm up structure developed in the second half of the first day. Feldenkrais believed that once an adult, the human forgets all the first movement discoveries as a toddler who tries to stand up and walk for the very first time. This approach is the primary concept within the methodology of his theory and Awareness through movement method. The toddler crawled around the space and the dancer tried to copy and trucks his physical moves. Through observation it was relevant that it effected the dancer's way of moving. The dancer struggled for a while to perform simple crawling moves round the space, as she/him is used to doing more challenging moves within the dance training. Another warm up task included walking round the space and creating geometrical pathways with the space. This task was influenced by the geometrical objects within Wassily Kandisnky's paintings. When communicated the instructions to the dancer, she moved around the space and was asked: "Are you aware of the spatial pathways and what it creates within the space?" The dancer answered that at the first glance she was not conscious of the spatial pathways, which she created on the first day. However on the second day the dancer was aware of the pathways and created circles, triangles and squares patterns. This structured warm up had no development on the way how she moved through the space on the second day.

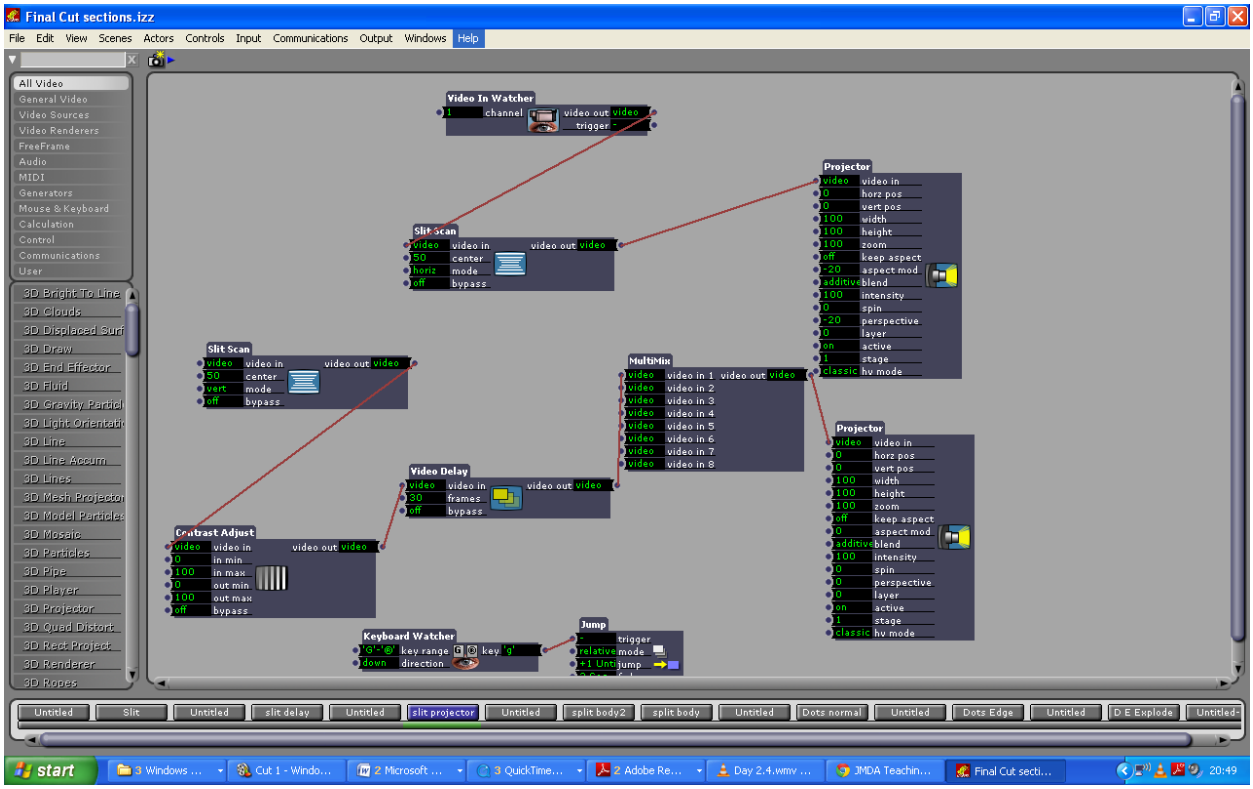


Figure 28. Actors used in Isadora scene – slit and delay horizontal 90 frames.

The fourth creative task the dancer explored was a setting as shown in figure 28. The actors in Isadora were set to a similar setting as the task three with one difference. The delay on the vertical part was set to two minutes. Please refer to the video footage 4. Once again the changes were done not giving the information to the dancer. The dancer had to observe the visual happenings, therefore the dancer recognised in very short time the changes to the moving image, however could not exactly point out what actually is different. The dancer eventually arrived to the conclusion, by watching the live image moving while the dancer stood still, that the moving image is on a delay. Only after few more exploration and the dancer work out. The dancer became physically aware of her physical body as a whole, as an individual body parts were clearer to them as well as they felt the visual image was an extension of her body. The dancer became aware her physical body and commented on the perceived experience:

I think I would have eventually realised that there was a delay, but after about ten minutes I could not mentally remember what way the delay was going but remembered physically. Also not being able to see the image proved difficult for me, possible because I was so focused on the shapes and they in turn influenced my movement. Whereas I had nothing to look at, I felt lost as of what to do next (Dancer, 2012).

Those particular body parts or points on the body, or muscles have not been used in her movement before. The dancer discovered different way to move, to lead and create movement with her head and torso as well as connect across three points such as finger, middle back, finger on other hand, by exploring this particular creative task. The dancer decides to initiate movement with her head and the lines of the visual image were more interested to respond to or to make another different interesting shape, please refer to the appending DVC video footage 3. The changing of the parameters for the dancer develops the outcomes of perceived experiences by the dancer. Therefore when she moved within the parameters of the camera frame, the visual image was projected on the wall and the dancer had to response to that visual image outside the visual camera lances parameters. Please refer to the appendix DVD video footage 5. Therefore these physical movements were not captured by the camera and therefore no live streaming of this visual image happened. The dancer comments on this experience that "…when I had to make shapes and then react on them I felt that the images disappeared from the screen too quickly for me to properly react" (Dancer, 2012).

This study is concerned with sensory perception, particularly in relation to visual imagery. The dancer perceives the image and empowers the sensory experiences in the creation of 'new' movement. The movement is defined by physical action and manifest into movement style such as pedestrian movements, gestures and other. The analytical approaches of each task were responses and feedback by the dancer and by the researcher. Therefore it established that the primary meaning of 'new movement' in this study is that the dancer acknowledged and embodied with the new ways of moving through the space for herself.

The discovery of even the smallest movement still makes a difference and therefore the dancer found new kinetic motions and points on her body such has palm, heal, finger, head and others as a starting point to generate a physical new movement. Subsequently the dancer moved with a different approach rather than using her ordinary a preferred move, therefore the secondary meaning of 'new movement' was established in this study. An ordinary preferred move is defined as a movement style, which is signature of an individual at a specific period in time. The preferred movement of the dancer is the qualitatively patterned way of moving, which she preferred to express her physical movement on most occasions when improvising (Bloom & Chaplin, 1982). The visual image gave the dancer a consciousness experience of new way of feeling it and experiencing it. Upon this sensory experience it added a new dimension, therefore the dancer had to engaged muscles or the body with a slight difference, even just a little tiny difference in legs motion or the upper body. The dancer also felt that the distorted image of their body, which was projected back onto the large wall, made them aware and very consciousness of her physical body. The dancer commented that she perceived her body completely differently than to what they could see after it has been transmitted onto the larger screen. It was almost a self-discovery experience, where the dancer had to once again connect with the mind, body and soul and rediscover her/his arms, legs and waist. This is shown in appendix DVD video footage 3. When the dancer perceived and understood that she has bigger arm than usually or that her feet are not that long as she thought.

The last task of the day was set in Isadora as follows, one frame on an angle with a delay of two seconds and the horizontal lines as in previous task. (See fig.29.a. and fig.29.b). Therefore when the dancer was moving, the projected image, which the dancer could see was an image of their body, however it was in some form and shape distorted and the horizontal lines were on two seconds delay. When the dancer stood still for longer period, or moved slowly for example with an arm, the visual image was showing disembodied image, representational image of the physical body (please refer to appendix DVD video footage 4.). The dancer was suddenly confused about her real physical body and started to question what is real and what is not real. The whole environment around her had a

different feel to it, almost transported her into the digital web. This task certainly made the dancer feel non-natural at first. The environment has changed and the visual images were projected and created virtual environment. This sensory experience made the dancer aware of the virtual environment. The dancer became conscious of the live experiences of this practical exploration. However the dancer commented that after getting used of this conscious experience, she became interested in the vertical lines of the moving visual image, which travelled horizontally. For example the elbow was initiating the move, please refer to figure 29.a.

Figure. 29.a Dancer task four where the vertical line of the visual image movement is initiated by the dancer's elbow.

Figure: 21.b Dancer task four where the dancer experiences movement with her arm and multiply the visual moving image.

The dancer discovered that the abstract image of the live streaming images was more fun, playful and interesting enough to play with shapes. The size and the colour of the visual image were appealing enough to create more and more extreme shapes and sizes, please refer to the figure 24.a. The dancer responded to the lines and shapes when further away from the visual image (please refer to the appendix DVD video footage 4). Despite that the abstract visual image was more of an interested to the dancer's eye, the virtual environment and what else the visual image can do, challenged the dancer physicality. The dancer comments are:

When I moved that was 'normal' or felt right to me, it look distorted on the screen. However even if I did an abstract movement that did not look much different. So it made me think that no matter what movement I do, it is all going to come out slightly abstract. This shows that my body and mind is very influenced by what I create on the screen, because when I went on the floor I completely forget about my body and movement and went back to just making images (Dancer, 2012).

Bergson's theory of duration questions the exact reproduction of the same movement. It is inner causes, which will reproduce the same event and is to assume that the same movement can appear the same a second time to consciousness. Since these two different movements are part of live happenings, these two psychic states of the visual image should be affected by one another and therefore changed. Therefore the heterogeneousness of each other would be essential to the dancer's perceived experience. Upon this the visual moving imagery, in this study, is produced should be related and differentiated but not a direct repetition. So for Bergson "it cannot here speak of the identical conditions, because the same moment does not occur twice" (Bergson, 1921, p.200).

One of the very first tasks used on day one, the use of geometrical and colourful square, circle and rectangle fig.5, was influenced by the Kandinsky work Merry Structure Fig. 5.a. This task has not been submitted as part of the final evidence, however there is one factor which is important to mention. The dancer went out of the space, while the researcher, myself, set the projection and interactive parameters. This task had two different levels. The first one had only three geometrical objects travelling. The green square moved side to side on the same line, the blue circle moved from down and up with distorting the circular shape. When the dancer came to the space, the instructions were only to move and response to the visual image. The dancer first observed the moving images and then starts moving in respond to that. After ten minutes of exploring and moving, the dancer's movement felt flat and without dynamic. The second time the fourth object was added, a red rectangle one, which was set to stay still. The dancer came back to the space and first did not observe any changes. The first responses to the moving visual images were discouraging and the dancer felt unmotivated. However once the dancer discovered that the red rectangle image is moving at the same time when she moves the dynamic picked up again. The dancer comments:

I felt this time that the red rectangle had slowed down, it did make my movements more related and slow…with the visual image being able to be controlled by me gave me much more aspiration for movement and dynamic and further describes that …the mixture of conscious through to make my movements different from the last task. But also from getting bored and uninspired by the picture, the red shape added northing to my imagination (Dancer, 2012).

The colours of the image were influencing the physical responses depending on the task and consciousness of the dancer. The dancer claims that “visual clues were more the colours than the shapes and again the visual clue was the brightness of my top and the brightness of it” (Dancer, 2012). The dancer also claims that the interactive tools of the visual live images were far more inspiring than the still images. During the different tasks the dance has expressed that some of the practical explorations and the responses becomes like a playground game. To be in control of the visual images was dominating some of the dancer’s responses. The dancer comments:

With the image being able to be controlled by me gave me much more inspiration for movement and dynamic. Controlling the image on the screen, enabled me to be much more creative and my movement nor so determined by the shapes moving on the screen (Dancer, 2012).

The still images were presented in task one and two, which the dancer could not explore once already explored and could not discover new way of moving. However it is relevant that each time the moving visual image presented interested stimulus for the dancer to move and to move in a new way, discover and to re-rediscover.

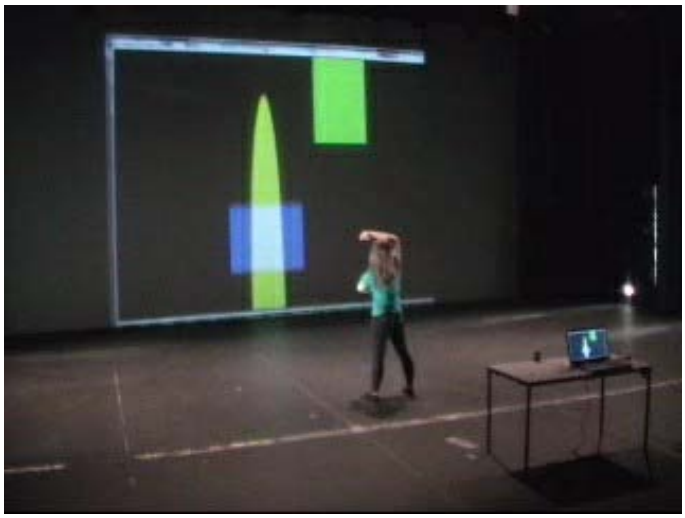
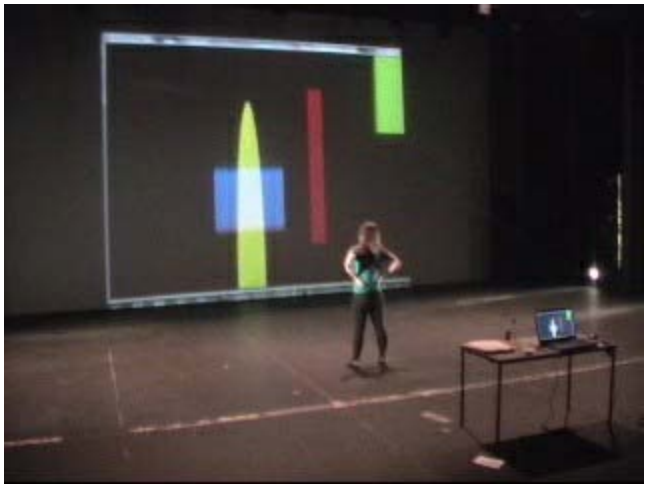


Figure: 30.a. The scene of the set exploration

Figure: 30.b. Wassily Kandinsky Merry Structure (1926)



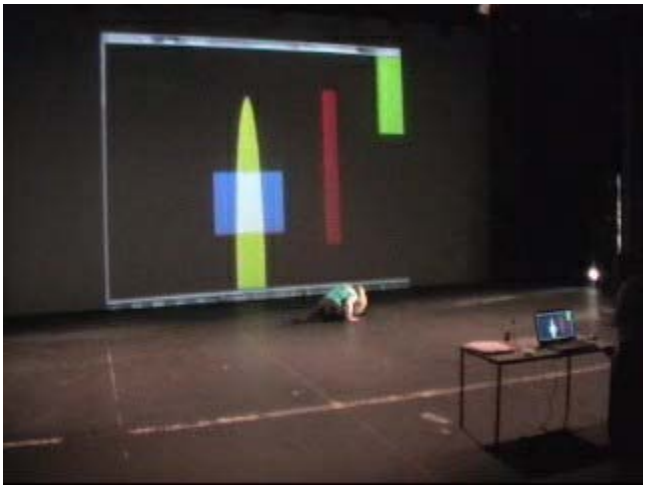


Figure 31.c Dancer exploration day 1

Figure 31.d Dancer exploration day 1

Mark Coniglio and his team created new modules in Isadora, which facilitated the sophisticated looping. The work of Troika Ranche company *Loop Diver (2009)* uses new elements where start and end points change with every iteration. Therefore it allows for

material to be gradually revealed to the audience (WWW, Coniglio, 2011). However the tasks and creative exploration of this study are using the sense of looping process. The creation of new movement was cause by the development of this cycle feedback within the interactivity process. From there the dancer perceived the new image once again and therefore it created new image, which is then streamed through the camera and the settings of Isadora scenes, back onto the wall and dancer once again react and response to that image. Therefore it is ever evolving process of looped feedback. No strategy on how to move was present within dancers consciousness and therefore the ongoing process of new realizations reflected the move before hand and the dancer comments “I had no strategy or structure, I just followed the lines” (Dancer, 2012).

The researcher observed and upon the observation, gave new instructions to the dancer for example during the creative exploration to comment on the choices of the responses she has made. The visual images constructed in the first two tasks were influenced by the Wassily Kandinsky’s works of art. The first two tasks were working with static image and the rest of the tasks were working with moving visual images, which were created by the dancer’s movement in respond to the perceived image. The reason why the dancer was presented with statistic image in the first task was to establish her movement vocabulary and to record its development throughout the four days of these practical explorations. The dancer movement development was influenced by the understanding of the visual behavior of the moving visual image, as well as it was guided by the moving visual image shapes, sizes and colour. The dancer connected with the perceived visual image and engaged in the thinking-in-work process. The challenges of each task made the dancer’s consciousness perform embodiment within the practical and theoretical applications of this research, which then results in changing the researcher’s practical thinking. These changes shifted the continuous looping feedback of each physical movement generated by the dancer. These processes were repeated and final findings were summarised and presented.

Conclusion

Sensory perception and sensory experiences embodied within dance practice in live and virtual environments have been at the heart of this practice-led exploration and research. This research was conducted through practical explorations and theoretical concepts of the visual perception and embodiment of its phenomena. The theoretical context of perception and visual perception were the key elements for this research. This chapter also discusses the other relevant cultural theories, which were contextualised in theoretical and practical approaches of this study. The understanding of knowledge and phenomena of the embodied theory within this practice was explored through the practical explorations. These interactive explorations were between the dancer, researcher and technology such Isadora software used as a research tool, to support this practical research. The improvisation technique was equally used as a improvisation tool with the creative tasks.

Perception refers to the means by which information acquired through the sense organs is transformed into experiences of objects, events, sounds or phenomena. Visual perception is very complex and several processes are involved in order to transform, analyse and interpret visual sensory information. Scientists discovered this complexity when trying to programme computers to perceive the environment and computers need very complicated programming to succeed with this. The understanding of visual perception has been influenced by the development of experimental, computational, neuropsychological and neuroscience approaches (Eysenkc & Keyne, 2000).

The understanding of the brain system is linked to the visual perception. There are more than thirty visual areas in the cortex as well as over half of the area in the cortex respond to the visual stimuli. The further the visual stimuli travels from the retina the more details of the perceived stimuli is required by the neurons. Retinal ganglion cells respond to any stimuli, however the end-stopped cells respond only to bars of moving stimuli in particular

direction. The increase of specialisation is required when the visual stimuli move even further into other visual areas of the cortex (Eysenkc & Keyne, 2000). The ganglion cells M (magnocellular or large-bodied) and P (parvocellular or small-bodied) are located in the primary retina. The two visual systems are dorsal and ventral streams part of the brain activity to perceive visual stimuli (Eysenkc & Keyne, 2000).

The theory of perception and its phenomena within the visual perception is use draw on Maurice Merleau-Ponty's theory. He says that "the perception becomes an interpretation of the signs that our sense provide in accordance with the bodily stimuli" (Ponty, 1945, p.33). The ordinary experience does draw on the clear distinctions between the sense experience and judgment. Sense experience is taking the appearance of the object, in this research study is a visual image, as it is without analysing it, without trying "to posses it and learn its truth" (Ponty, 1945, p.34). On the contrary judgments is an effort to know something more about the perceived visual image, which then can be taken and remembered for the rest of the life and equally registered in actual or potential minds. The judgment is brought in to explain the perception over the retinal impressions, which becomes a mere factor of perception, and provide information about what the body does (Ponty, 1945). The perceptual consciousness are constitutes its visual stimuli in two ways. One is the objective way without its image analysis in non-relation to the time and its meaning and the other is the incapable way to express it. The concept of attention is explained by Ponty as a process of perceived stimuli, which does not correspond to the objective properties of the source perceived stimuli, and therefore the human eye is forced by the constancy of the hypothesis to admit, that the visual normal sensations are present. Therefore the attention is a general and unconditioned power, that any movement can be "applied indifferently to any content of consciousness" (Ponty, 1945, p.26). When the attention is experienced by the dancer, within the dancer's knowledge base the perceived object and its aesthetics structure must be known to the dancer. The consciousness find the geometrical shape such as line and colours within the horizontal plate of the represented visual image projected onto the wall. This is because the orientation and shape has been already perceived by the dancer prior to the seeing this particular visual stimuli, meaning it has

been perceived through external experience on different occasions of the dancers life. The knowledge base attention is used by the dancer to perceive and to have sensory experiences. The external experience is the ability of the dancer visual system and brain function of visual cortex to make her/him to believe what she/he sees, not to make her/him to see what is not there. Therefore the internal experience is possible only when the visual stimuli borrowed from external experiences (Ponty, 1945). The intellectuality of all its objects as well as constitutes of everything known is established in the consciousness, therefore the attention becomes abstract. This abstract attention sits in the knowledge base consciousness and is recalled by the dancer, when visual sensory experience is perceived (Ponty, 1945).

Consequently the theory of ‘pure perception’ by Henri Bergson (1859–1941), identifies that the knowledge of visual image and its pure state, takes places within the represented visual stimuli. This theory further explains that the hypothesis of perception happens when the dancer senses the visual moving images. This is used in the method of intuition, where the image is subject positioned in-between realism and idealism (Bergson, 1921). Therefore matter is a visual image that possesses a hidden power, which is able to produce representations in the dancer’s perception. However there is no hidden power in matter, which is matter of the visual image. Therefore the visual image, which is perceived by the dancer, does not differs from representation and it does not differ in nature from the representation of the visual stimuli. Bergson proposed that the representational “image is ‘less’ than a thing but ‘more’ than a representation” (Bergson, 1886, p.26) The “less” and “more” indicates that the representational image changes from the image by degree, and therefore the perception of the visual image is continuous with the images of matter (Bergson, 1921). His theory of multiplicity, which proposes the differentiation between time and space, indentifies that the immediate data of consciousness is temporal (Bergson, 1886). This is further explored in his concept of duration and therefore the dancer experienced the freedom of this internal experience. The intelligence is guided by the needs of the dancer’s understanding and therefore the knowledge of the perceived visual image is gathered and becomes relative knowledge. The analysis of the visual image is the

basis of the relative knowledge, the dividing of things according to the structured image. Bergson's method of "comprehensive analytic knowledge then consists in reconstruction or re-composition of a thing by means of synthesizing the perspectives" (Bergson, 1921). Therefore the synthesis of the visual image reveals only the general concept of the perceived visual image. This phenomena is called "the turn of experience where experience becomes concerned with utility, where it becomes human experience" (Bergson, 1986, pp.184–85). Intuition therefore is a kind of experience, which consists in entering into the image, or in other words, to identify the image from the knowledge base experiences and give the dancer absolute knowledge of the visual image. Bergson defines this as the absoluteness, when it is applied within a perceived moment (Bergson, 1921).

Where the knowledge might be established and the location of key moments within different approaches is placed in the problem of knowledge (Nelson, 2006). Professor Robin Nelson developed the Mode of Knowledge, which is a model for the practice as research and for practitioners to recognise the importance of knowledge base within the research. The creative and research process is explored and can derive from any of those three points of the triangle, which then creates the mixed-mode research and practice as well as the theoretical practice (Nelson, 2006). The challenges of the creative process have the embodied knowledge in respect of the focus of knowledge. Nelson further explains that the bodily dissemination of knowledge, which is passed on from one community to another, establishes the appropriate means of storage and distribution of knowledge. For example the dancer's movement vocabulary is passed on within their educational dance training, which she/he then pass on or utilise within the conceptualised research of this study. Therefore the dancer will tap into her/his knowledge base of contemporary dance technique as well as draw on the primary structure of making and moving in response to the stimuli. The dancer uses something which they are familiar with - the cognitive academic knowledge. However the research questions and advanced explorative improvisation tasks make the dancer use the knowledge base to support the research explorations - the embodied knowledge and at the same time to gain new skills and sensory experiences – the explicit knowledge (Nelson, 2006). This process is not limited

just to the dancer, it also applies to the researcher at the same time, where I am using the knowledge base from my personal dance training and experience – the embodied knowledge and phenomenological experience, I have gained the research theoretical framework as well as methodologies which underpin my thinking process – the traditional theoretical knowledge. Therefore it is clear that this research derived from the point of the practitioner knowledge and the dancer's conceptual framework of the Modes of Knowledge. Both together applied the modes of knowledge from different point and through the explorative tasks adopt the next following modes of knowledge factors, which created the mixed mode research for the researcher and mix-mode practices for the dancer (Nelson, 2006).

The product of the research sits in the middle of the Modes of Knowledge triangle, where the embodied experiences, had to be relevant for the dancer and research. The embodiment theory presented by Sarah Rubidge, where she described that the embodiment, in her PhD practice work, meant that the theory influences practice and the way in which the choreography can embody with the theoretical framework as well as having effect on theorising. The interactive digital work *Intimate Memories* (1994) presented as part of her research shows that during her research the dance thinking mode underwent radical changes as well as the practical changes had an embodying effect on the philosophical thinking. Therefore the dancer during the improvisational exploration had to make a substantial shift within the embodied knowledge of her dance training practice, which became the explicit new knowledge of her theoretical framework (Rubidge, 1998). In this study as a researcher, I have found myself in the process which I call 'spiral processes', where the embodiment of the theoretical frameworks led the practical explorative tasks. Through phenomenological experiencing of the practice and embodying within the thinking creative process, my own philosophical thinking had to shift towards the new mode of knowledge production. That new philosophical charge of knowledge then led to a new set of practical questions, which then undergo another theoretical thinking process and empowered the practical explorations.

This spiral processes contributed to this study and it gave the structure of the short scores of the practical performance, which will be shortly presented. The spiral process is also evident within the phenomenological experience of the dancer's visual experiences. The dancer pauses in stillness during the practical exploration, which is perceived through visual senses, and engages with the brain visual cortex and nervous system. The new mode of knowledge production is charged and led the dancer to physically manifest into movement with new meaning, experience and thinking.

The short score has three sections, in which set parameters are established by the researcher and applied by the dancer. The dancer embodies with the visual moving image, and therefore the front of the dancer's body is turned away from the spectator. This introduces new dimensions of the moving dancing body in different view for the spectator. However during the transitions between each score the dancer will use the geometrical floor patterns and therefore will engage with the audience for a split of second. In the first section is evident the dancer using foreground, middle ground and background to explore the movement and gravity. In the second section the horizontal line is on a delay time, therefore the dancer has a short time to react to the visual image, perceive the new images, and then react to the new sets of perceived images. This is continuous evolving perceived experience of the visual stimuli and continues physical manifestation. In the third section of the short score, the dancer explored pedestrian movements, where walking side to side, diagonally forward and diagonally backwards, and observes the multiple images of herself. The dancer used the pedestrian movement and triggers the moving visual image. Bergson's concept of intensity is reflected in this study, in which the form of qualitative visual image is left behind by its creator, in this study the dancer. This is created by the compromises of the pure quality, the consciousness of the dancer, and pure quantity, which is space. The increasing and decreasing speed of the dancer's movement either makes the visual image increase or decrease in its multiple images. The multiplicity of the images, which she has developed from the perceived senses, set of line and order, which creates the qualitative multiplicity.

The dancer experienced the embodied theory within the set of creative tasks, which used the awareness of movement method by Feldenkrais and improvisation technique. The improvisation technique was influenced by the developments made by Anna Halprin, dancer and choreographer, who developed this technique during the 1970's in America, together with other practitioners such as Yvonne Rainer and Steve Paxton. Halprin had broken away from the conventional academic modern dance and the promoted codes of specialized movements, instead adopting a tolerant, inquisitive, open attitude toward the body's capabilities and self-expression as well as spatial architecture summarised in her approach to improvisation (Barnes, 1996). The creativity and creative process to have a potential within the choreographic process is to have structure and less control in the same time. The kind of structure, which set the framework that encourages the discovery of concepts and truths related to the contextualised structure. The less controlled is defined by Halprin to have the opportunity to explore movement ideas, which are part of experiences of the imaginative transformation and manifest into externalised form (Hawkins, 1991). This is why improvisation technique was so important for the researcher. The dancer had set parameters for each practical explorative task and at the same time it allowed the dancer to explore the movement ideas of the dancer's inner vision. When looking at the model of the Modes of Knowledge, improvisation sits as part of the tacit knowledge. This improvisational technique is empowering the dancer's explorations and experiences. Hawkins further defines that improvisation is, to a certain extent, an experience of the dancer, without being able to explain why and how the dancer knows that she/he is experiencing the tacit knowledge act (Hawkins, 1991). For the purpose of this study the dancer was asked to try to explicitly consider why and how a particular visual image made her/him move and explore different ideas. This was then recorded and this study uses the video-diary and dancer's written feedback as well as the notes of the researcher as documentary evidence. All documents were analysed and presented in the research findings chapter. The feedback and analysis augmented and enriched the theoretical and practical knowing of the dancer and the researcher.

The embodied sensory experiences had been achieved by using the interactivity between the dancer's physical movement techniques, as we established the improvisation technique, and the digital software Isadora. Isadora functions are to interact, record, manipulate and create environments, in which the dancer can engage (Cognilio, 2009). Isadora was used in this study as a 'research tool' for the purpose of facilitating the sensorial experiences and its embodiment with the live and virtual environment. At the same time the dancer had influence on how the researcher constructed the technological parameters of the virtual interactive environment. The software gave the research structure, where the researcher constructed scenes with actors, which then were presented to the dancer during the practical explorations. The dancer had set parameters such as spatial and visual parameters to work with too. Through the observation of dancer's cognitive behaviour I had to go back to the scene and restructure the actors to make sure I get the answers and valid data of information for the purpose of this research study.

The first acceleration around using computing and the digital within the arts was seen within the domestic retail markets downturn in the sale of computing hardware (Dixon, 2007). This was followed by downturn and major difficulties of the dot.com companies. Therefore the lost in investment, interest and development had widespread over the globe and were affection the digital applications associating activities including the arts. The search engine Google who were part of the success stories when the Internet boom came at the beginning of twentieth first century. George Steiner, a leading academic, at that time explored the distinctions between artistic creativity and technological invention, and categorizing the former as transcendental and metaphysic – questioning the last forever and was 'life' as well as the technological pragmatics – which studied the technological question of 'death' (Dixon, 2007, p.644). The liveliness theory presented by Philip Auslander is based on the mediatisation upon the live events. Auslander says that the live performance is now incorporate the technology of reproduction, however they became hardly live at all. The live form replicated the mediatized form. He suggested that the historical development of the live performances took the representation development of the television production, which replicated the visual experiences of the theatrical phenomena

(Auslander, 2008). He also argued that 1940's live theatre became increasingly like television and other mediatised events, to the extent that live performances now emulate mediatise representations. Therefore the live performances became the recreations of themselves as refracted through mediatisation (Auslander, 2008).

The new technologies were reflected in the arts in early twentieth-first century. The new concept of making classical historical drama productions more accessible to younger and wider audience had influence on the theatre and dance performances in twenty-first century. Merce Cunningham, Wayne McGregor, William Forsythe to name few, are pioneers of the digital performance movement and gives the impression on how to revised the views on technology's benefits and retreated back to the live (Dixon, 2007). For example William Forsythe and Ballet Frankfurt's work Kammer/Kammer (2000), which was created around the apex of digital dance and the work presented the 'hybrid' dance, theatre and film performance. The digital characteristics of this work are cleverly assembled and no longer paramount to the viewer and became comprehensively absorbed into daily life. Consequently Wayne McGregor and his company Random Dance Company work Nemessi (2002), which was presented with cyborgic metal arm extensions of their earlier work and did not include the media projections and (Dixon, 2007). The Artificial Intelligence, which Steiner argued, is the ultimate beyond the reach of computers. As technologists conceive and build new virtual words and systems, he contests, that their use and value will ultimately be considered in the same way as the distracting and disposable as other relevant technologies (Dixon, 2007). Therefore at some point of the research I might find myself using out-to-date technology, which then can affect the outcomes of the research practice. I found myself with out-dated video cameras, which were not high definition, and therefore the quality of the video-diary is not as clear as this level of Masters Degree requires. Technical problems arrived when trying to use Isadora on a laptop, with a slow processor, I had to change the way of how I am going to record the movement not using Isadora recording function. Also it influenced how complex the scene could have been so data did not have to use too much processing power. It also did not help that when Isadora was provided for this research, the version was for Mac computers, and therefore when

installed on a normal Samsung laptop, it could not communicate with the laptops processor faster enough. Once Isadora was installed on the laptop, I faced another challenge, where the video camera, which was used to stream live video, a very important equipment for this research, for the dancer to interact with the visual image. What I found was that the video camera was not working with a laptop which had Windows 7 installed. It had to have XP programme, in order to run it. The technical team managed to find a video camera, which was compatible with the laptop and we were ready for the practical explorations. Despite the technical problems this research was undertaken in an appropriate manner to the relevant technical equipment available.

Through analytical process this research reached and discovered the following findings. The colour processing and motion is relevant to this research study. Through the practical explorations it was discovered that for the purpose of the dancer to visually perceive and respond to the visual image, the stimuli required to be visually stimulating for the dancer to do so. The dancer recognised that the yellow colour worked for her, and therefore it influenced the level of interactivity and creating interesting 'new' shapes. Subsequently the analysis of the dancer's movement vocabulary developed from day one to day two with embodiment of the same task on both days. The explorations and improvisation tasks from the day one influenced the dancer on the day two, when engaging in the same creative task one, when the visual image was still, projected onto the large wall. The still visual image was a collage of two Wasilly Kandinsky works Circles Retro Mod Painting and Squares with Concentric Circles. Consequently further analysis of the dancer's movement vocabulary when moving image was presented as a stimuli for the dancer to respond, has developed by the embodied experiences. The dancer became more explicative in the movement, and realised that even the smallest movement of the arm, elbow or flicking fingers triggered the visual image to create new shapes.

The 'new' movement was discovered when the dancer embodied with live and virtual visual image together. This embodiment happened on and off, according to the dancer and analysis of the observations, the dancer's consciousness embodied for a few minutes and

then it disappeared and re-discovered once again. The dancer commented that it was almost impossible to stay engaged within the same sensorial experiences too long as the visual image constantly was changing and therefore the kinetic movement and cognitive responses had to change too. The improvisation technique gave the dancer the suggested freedom for the interactivity employed within the live and virtual environment. The interactive embodiment between the dancer and the technology, Isadora and video cameras, was experienced through the creative tasks.

The perceived visual image was influencing the dancer's decision making to move, to respond to it. The results were that if the dancer was too close to the perceived image it was too distorted and therefore the dancer responded to the visual image on the left (if the dancer stood on the right). Also when the dancer perceived the visual image its lines and shapes were manipulating the dancer's movement vocabulary. The dancer was challenged with a gravity momentum when facing upside down to view the visual image and responded to the shapes. Once again upright the dancer developed the movement by initiating the starting physical movement by different body parts such as head, fingers and spice. The result of this was creation of new shapes. This process was then repeated over and over and as the feedback from one interactive activity of the dancer and visual image happened, the next feedback has been analysis and questions, followed by another feedback and new movement vocabulary. This process I have called the looping feedback of the embodied sensory perception.

The 'surreal' environment was achieved by the constructed actors of the Isadora software.
I have programmed the different actors so the dancer experienced different environment, therefore the dancer had new experiences and questioned the live and virtual embodiment. The result was that dancer discovered that the way how she perceived her body was so different to what they subconsciously as thought of. To see her body distorted, represented by the visual image within surreal environment, had an effect on the tempo of the movement and it had more clarity and the awareness on the movement detail.

This study shows potential in an extended research within the pedagogical approaches. This could be explored through different pedagogies such as discovering learning, the learning by doing and blended learning by implementing them in a digital environment with the dancers training process. Another further development within this research would be the development of the practical explorations such in small groups of dancers interacting and perceiving the moving visual image. How this would have an effect on the moving visual image itself, what the movement of the dancers would be like and the spatial awareness within the set environment. A further practical exploration would be working with interdisciplinary collaborations other , such as visual artists, painters and sculptors leading them through this creative tasks explorations and observe the impact of this practical explorations on their either artistic approach during this process or the development of their artistic practice after going through this process.

The technical set up would have to be advanced, where two or more computers linked together, would perhaps developed the visual stimuli. The development of this research can be working collaboratively graphics, web and programmer developers to develop new software itself and use Isadora software as a starting point. The further development of this research shows potential with use of additional equipment such as the eye tracker. The development of new tool is possible within new direction for the interactive research tool. The eye tracker interface would track the exact eye-movement of the dancer visual perception. This tool should be developed with the collaboration of the dancer within their training as well as number of programme developers. Consequently the theoretical development of the cognitive sensory perception, where the truth eye-movement would be recorded while perceived through the visual cortex. Therefore the recognition of the dancer's selective process show potential conceptualised idea. The real interactive embodiment between the mind, body and digital media should investigate the relationship of visual cortex and the visual stimuli within the embodied live and virtual environment. Therefore the level of interactivity would develop from medium to high-interactive research. The method development of cognitive behaviour pattern of the dancer, when moving and interacting with the visual image, would contribute to the understanding of the single

scripture behavior. This then would develop the selective method of the dancer in order to generate and create movement.

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Kandinsky, W. (1866-1944)
Figure:16. Wassily Kandinsky, Der Blaue Reiter (1903), (Friedel with Hoberg, 2008, p. 54)
Figure:18. Wassily Kandinsky Squares with Concentric Circles (1925) and Abstract Art Artist painting
Figure:19. Abstract Art (Available at http://artdiscovery.info/rotations/rotation-1/packet-16/)
Figure:30.b. Wassily Kandinsky, Merry Structure (1926).

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Appendix

Task	Dancer's Response
Task 1. On the day one	"The visual clue that triggered my response was the circles, instantly I thought of more curved movements" (Dancer, 2012).
Task 3. And 4. On the day two and three	I was concentrating mainly on my legs and talking so my body got lost in movement. The visual clue was the colour of my top for me. The yellow works well. I was trying to see what shapes in my body created the same shapes on screen I discovered that it is hard to crate the same shape twice whilst doing the same movement. The image is different every time. It made me again feel creative, the delay made me want to see how much I could play with it and see how many things can overlap (Dancer, 2012). Please refer to the figure 6a and 6b.
Task 4. Second version with the delay actor	I think I would have eventually realised that there was a delay, but after about ten minutes I could not mentally remember what way the delay was going but remembered physically. Also not being able to see the image proved difficult form me, possible because I was so focused on the shapes and they in turn influenced my movement. Whereas when had nothing to look at, I felt lost as of what to do (Dancer, 2012).
Task 4. Second version with the delay on.	"when had to make shapes and then react on them I felt that he images disappeared from the screen too quickly for me to properly react" (Dancer, 2012).

Tasks on the day three	When did movement that was 'normal' or felt right to me, it look distorted on the screen. However even if I did an abstract movement that did not look much different. So it made me think that no matter what movement I do, its all going to come out slightly abstract. This is shows that my body and mind is very influenced by what I create on the screen, because when I went on the floor I completely forget about my body and movement and went back to just making images.(Dancer, 2012)
Task with geometrical objects on the day one only	I felt this time that the red rectangle had slowed down, it did make my movements more related and slow…with the visual image being able to be controlled by me gave me much more aspiration for movement and dynamic and further describes that …the mixture of conscious through to make my movements different from the last task. But also from getting bored and uninspired by the picture, the red shape added northing to my imagination. (Dancer,2012)
Tasks 3. And 4. On day one two and three.	With the image being able to be controlled by me gave me much more inspiration for movement and dynamic. Controlling the image on the screen, enabled me to be much more creative and my movement nor so determined by the shapes moving on the screen (Dancer, 2012)
Task 4. The first version with horizontal and vertical slit actors	"I had no strategy or structure, I just flowed the lines." (Dancer, 2012)

DVD

Footage 1. Task 1 on the day one and two

Footage 2. Task 2 on the day one and two

Footage 3. Task 3.

Footage 4. Task 4.